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BARTON'S FRAGMENTS

OF THE

NATURAL HISTORY OF PENNSYLVANIA.

EDITED BY

OSBERT SALVIN, M.A., F.R.S., &c.

LONDON: MDCCCLXXXIII.

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NATURAL HISTORY OF PENNSYLVANIA.

JUN 11 1913
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EDITED BY

OSBERT SALVIN, M.A., F.R.S., &c.

LONDON: MDCCCLXXXIII.

PRINTED BY TAYLOR AND FRANCIS,
RED LION COURT, FLEET STREET.

PREFACE.

It is to be regretted that the want of leisure **Barton** speaks of in the concluding page of this 'Fragment' prevented him from publishing at greater length on the Natural History of his native country; for the present work shows that its author was a man of no ordinary observation and intelligence. He wrote at a time when our knowledge of the ornithology of North America was quite in its infancy, and some years before Alexander Wilson published his ever-famous work, which gave the impetus to the study, which has gone on increasing to the present time.

Barton in the present work introduced several new names for the birds upon which he wrote, but he seems never to have appreciated the importance of adding to these names definite descriptions. His titles therefore, like those of his friend and predecessor William Bartram, lack precision, rendering their meaning in some cases doubtful, and in others unintelligible. Dr. Coues, in the Bibliographical Appendix to 'The Birds of the Colorado Valley,' wherein he treats of faunal publications relating to North-American Ornithology, gives a full abstract of this work of **Barton**'s (p. 592), and collating his names with those of Bartram, gives their modern significance so far as he can make them out.

'The Fragments' appears to be a very scarce book. Dr. Coues, when compiling his account of it, referred to a copy in the Congressional Library at Washington, which had formerly been in the possession of **Barton**'s son, Thomas Pennant Barton. That from which this reprint has been made is in Mr. Godman's and my own library, and was formerly in that of the late Vicomte Du Bus. Another copy is in the Banksian Library in the British Museum.

The work is dedicated to the "Linnæan Society," of which **Barton** was a Foreign Member, having been elected on 17th January, 1797.

OSBERT SALVIN.

Cambridge, January 1883.

FRAGMENTS

OF THE

NATURAL HISTORY

OF

PENNSYLVANIA.

BY BENJAMIN SMITH BARTON, M.D.

PART FIRST.

PHILADELPHIA:
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TO

THE LINNÆAN SOCIETY,

THE FOLLOWING

FRAGMENTS

(WHICH ARE INTENDED TO ILLUSTRATE, IN SOME DEGREE,

THE

NATURAL HISTORY

OF

A COUNTRY

EXTREMELY INTERESTING TO PHILOSOPHERS,

AND

HITHERTO VERY IMPERFECTLY EXPLORED)

ARE, WITH GREAT RESPECT, INSCRIBED BY

THE SOCIETY'S FRIEND AND BROTHER-MEMBER,

BENJAMIN SMITH BARTON.

PHILADELPHIA,
April 18th, 1799.

INTRODUCTION.

§. I.

THE first ten pages of the following FRAGMENTS will, probably, be thought the most interesting part of this little work. They exhibit a rude and imperfect sketch of the *Natural History-Picture* in the neighbourhood of Philadelphia: a picture which, if it were drawn by an able hand, could not fail to prove interesting to the lovers of science, in every part of the world. Each of these pages is divided into five columns. The first respects the day of the month when the birds mentioned in the second column arrived, or were *first seen,* in the vicinity of Philadelphia. In the second column, I have given what may be called the scientific Latin name of each bird. In this part of my subject, I have always preferred the name of Linnæus, when I could discover that the bird had been described by this great naturalist. But several of the birds, which are here mentioned, were not known to Linnæus: at least, I do not find that they have a place in any of the editions of his immortal work, the *Systema Naturæ.* I have, therefore, been obliged to adopt other names, and, in a few instances, to impose them myself. I have often adopted the names of Professor Gmelin, the laborious, and often successful, editor of the new edition of the *Systema Naturæ.*[*] When this is the case, I have affixed to the scientific name, the letter G, thus (G.) I have in this column, sometimes made use of the scientific names of my ingenious and good friend, Mr. William Bartram, a gentleman who has contributed much to our knowledge of the natural productions of North-America. To the names which I myself have imposed, I have affixed the word (mihi). But I by no means pretend to assert, that all the birds thus marked are new, or have not been described by naturalists.

§. II.

In the third column, I have given the English scientific and the English provincial names. The former are chiefly taken from the *Arctic Zoology*[†] of my excellent friend Mr. Pennant, because this is a work of such extensive merit, that I presume it is in the hands of almost every naturalist; and because the names imposed by this gentleman are, with a very few exceptions, just and significant. By the English provincial names, I mean the names by which these birds are best known in Pennsylvania, and in various other parts of the United-States. These provincial names are always enclosed within a parenthesis, as in the instances (Pewe), (Turtle-Dove), &c. They are designated in the same manner in the list of Resident Birds, &c. in Section III. The greater number of these names are used in Pennsylvania.

§. III.

The fourth column relates to the "Progress of Vegetation." The greater number of the vegetables which I have here enumerated are natives of Pennsylvania. Some, which are not natives of this state, are natives of other parts of the United-States; whilst others have not, hitherto, been found to grow spontaneously in any part of America. In general, the plants are designated by their Linnæan names. In a few instances, I have adopted the names of the late Mr. Aiton, in his *Hortus Kewensis*; those of Marshall, and other botanists. All the plants which I have mentioned are found, either wild, or growing in gardens, in the neighbourhood of Philadelphia, where the remarks on the time of their flowering and leafing have been made.

§. IV.

The fifth and last column contains "Miscellaneous Observations." In this part of my Sketches, I have done but very little. Want of time has prevented me from throwing into this column, many interesting facts, some of which will be presented, perhaps to greater advantage, to the public, in my future publications. The few Thermometrical and Barometrical observations, which occur under this head, are given on the authority of my ever-venerated maternal uncle, the late David Rittenhouse, Esq. These observations were made in Philadelphia.

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[*] Printed at Leipsic, in 1788.

[†] The second edition. London: 1792.

§. V.

It must not be imagined, that I communicate these sketches to the public as exhibiting even the names of *all* the migratory birds of Pennsylvania. I am persuaded, that *many* of these birds have escaped my notice. This is, perhaps, especially the case with the birds of the genera Anas, Tringa, and of the extensive order of Passeres, &c. which I suspect are constant in their migrations from the north to the south, and from the south to the north. A good many of the birds which are mentioned by Mr. Pennant as natives of New-York have not hitherto, to my knowledge, been observed in Pennsylvania: but it can hardly be supposed that those species which are *common* in New-York (if we except such as delight in the vicinity of the sea-coast) are *uncommon*, or never seen, in Pennsylvania. Here, however, I must observe, that I cannot but suspect, that Mr. Pennant, Mr. Latham, and other able ornithologists, have sometimes described as distinct species, birds which merely differ in sex, or in age, and in their colouring, for which these animals, at different seasons of the year, are so remarkable.

§. VI.

Besides the constant migratory birds, there are others, which may be denominated *occasional* migratory, or visitant, birds of Pennsylvania. Such, not to mention several others, are the Columba passerina, or Ground-Pigeon, the Fringilla bicolor, or Bahama-Finch, and a species of Psittacus, or Parrot.

§. VII.

The two first of these birds were seen in the neighbourhood of Philadelphia, between thirty and forty years ago. The Psittacus, most probably the Psittacus pertinax, Illinois Parrot, or the Psittacus carolinensis, Carolina Parrot, has been occasionally observed in Shareman's Valley, on Shareman's Creek, a branch of the river Susquehanna, within twenty miles of the town of Carlisle.[*] This last fact seems to contradict the observation of Mr. William Bartram, who says, "The parakeet (Psittacus carolinensis) never reach so far north as Pennsylvania, which to me is unaccountable, considering they are a bird of such singular rapid flight, they could easily perform the journey in ten or twelve hours from North-Carolina, where they are very numerous, and we abound with all the fruits which they delight in."[†] It is well known, that the late M. de Buffon had limited the range of the whole of the Parrot-kind to exactly twenty-five degrees on each side of the equator.[‡] Mr. Pennant has shown that the eloquent French naturalist was, in this instance, mistaken.[§] My observation is an additional objection to the hypothesis. I may add, that a very large flight of parakeets, which came from the westward, was seen, a few years ago, about twenty-five miles to the north-west of Albany, in the state of New-York. The arrival of these birds in the depth of winter[||] was, indeed, a very remarkable circumstance. The more ignorant Dutch settlers were exceedingly alarmed. They imagined, in dreadful consternation, that it portended nothing less calamitous than the destruction of the world.[¶]

§. VIII.

I suspect it will be found, that, in general, our southern birds migrate farther north in the tract of country west than in that east of the great ranges of our mountains. With respect to the birds, I hazard this merely as a conjecture: but it is a conjecture which derives support from many interesting facts which I have collected, and which will be mentioned and explained in my *Geographical View of the Trees and Shrubs of North-America.* In that work, I shall show, that the southern trees and shrubs (that is, those vegetables which attain to their greatest perfection in the southern climates of our continent, particularly of the United-States) are, in general, found much farther north in the western than they are in the eastern parts of our country. This fact seems to show, and the point is put beyond any manner of doubt, by thermometrical observations, that the western climate, in the same latitudes, is more temperate than the eastern. Of course, it were natural to suppose, that the southern birds, to whom heat is so genial, would often be solicited farther north in the western than in the eastern district. This, with respect to some birds, is actually the case. Mr. Jefferson has observed, that "Perroquets even winter on the Sioto, in the 39th degree of latitude."* I have certain information, that these birds winter still farther north than is here mentioned.

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[*] A friend of mine has informed me, that the Parakeet seen in this valley is the same species which is frequently met with in the neighbourhood of the river Ohio. This last is supposed to be Psittacus pertinax.

[†] Travels through North and South Carolina, Georgia, East and West Florida, &c. P. 301. Philadelphia: 1791.

[‡] Histoire Naturelle des Oiseaux. TOM. XI. P. 113 and 114. Duodecimo-edition. Paris: 1780.

[§] Arctic Zoology. VOL. I. P. 285.

[||] In January, 1780.

[¶] This fact was communicated to me by Egbert Benson, Esq. of the State of New-York.

§. IX.

Birds, in migrating, are fond of following the courses of rivers, and other large streams of water. This circumstance, in my opinion, partly explains the reason, why some of the birds of the southern parts of the United-States, and also some of the South-American birds, which have never, or very rarely, been discovered in the Atlantic countries of North-America, are not uncommon in the countries west of the Alleghaney-Mountains. These southern birds, following the courses of the Mississippi, and its branches (the Ohio, the Illinois, &c.) are spread or dispersed through the rich and extensive territories that are washed by these waters. Whether or not this explanation be admitted, the fact is certainly as I have stated; and to the naturalist it cannot but appear interesting. The Psittacus pertinax is one of the birds of Brazil; and the Muscicapa Tyrannus, which is held in so much esteem by the Naudowessies, and other western Indian tribes, is a native of Surinam, and of the country bordering on the river Plata.

§. X.

It is, I think, in general, a just observation, that our Spring and Summer birds of passage continue with us about six months, and are absent for the same length of time. Accordingly, those birds which arrive early in the spring disappear early in the autumn, and those which arrive late in the spring do not disappear until late in the autumn. Our late springs are commonly succeeded by late and warm autumns, which, by keeping alive the numerous species of insects, which are the favourite food of almost all our summer birds of passage, detain these birds for a considerable time among us.

§. XI.

The greater number of the Spring and Summer birds of passage, which I have mentioned, build and breed in Pennsylvania.† Perhaps, they all breed in some part of this extensive state, with the exception of the Vultur Aura (Turkey-Buzzard), and a few others, which do not visit us until towards the close of the summer. It has lately been ascertained, that the Ampelis Garrulus, or Prib-Chatterer (Cedar-Bird) does breed in Pennsylvania; and I doubt not, that the same will, in time, be discovered to be the case with the Emberiza Oryzivora (Rice-Bird, Reed-Bird), and others whose nests have not hitherto been seen in Pennsylvania. It is not unlikely, however, that some of these birds of passage continue their migration farther northward, to New-York, New-England, Vermont, &c. and there breed and raise their young, returning southward, through Pennsylvania, in the fall.

§. XII.

It is an interesting fact, for which we are indebted to Mr. William Bartram, that very few of our birds of passage from the south "build or rear their young in the south or maritime parts of Virginia and Carolina, Georgia and

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* Notes on the State of Virginia. Page 139. The original edition.

† See Appendix I. where I have designated with an asterisk (*) those birds which *are known* to breed in Pennsylvania. The greater number of them thus marked breed within a few miles of Philadelphia.

Florida."* This circumstance leads to a suspicion, that the principal cause (I will not, out of complaisance to any one, call it a necessary instinct) which leads or impels these birds to migrate to the northward, is that they may make choice of a proper climate, abounding in their favourite food, to perform their amours, to build their nests, and to rear their young. Much light might be thrown upon this curious subject, if natural history were cultivated in the United-States, with a portion of that innocent and useful zeal with which it is cultivated in Europe: with only a small portion of that ardent zeal which so strongly characterizes the Americans in their pursuit of gain. But, as yet, little attention is paid to the study of nature in the United-States. In our colleges, it is not taught as an indispensable branch of polite or useful knowledge, but is obliged to yield its laurels to languages which are withered or dead, and to studies which are useless or ignoble.†

§. XIII.

It has been supposed, that many of the birds which I have enumerated, pass, on their return to the south, during the autumnal months, through the countries which are situated to the west of the great ranges of our mountains. That this is sometimes the case, I do not doubt: but it is not the general order of the migration of our birds. My opinion, indeed, is opposed by the authority of some very respectable naturalists, whose sentiments deserve to be mentioned in this place. "The birds (says the late Mr. George Edwards), which pass through the country northward in the spring, being never observed to return the same way, Mr. Bartram supposes that they go to the southward in autumn by some other passage beyond their inland mountains." ‡ This notion is likewise adopted by Mr. Pennant. Speaking of the Motacilla vermivora, or Worm-eater, this able zoologist says, "It does not appear in *Pennsylvania* till *July*, in its passage northward. Does not return the same way; but is supposed to go beyond the mountains which lie to the west. This seems to be the case with all the transient vernal visitants of *Pennsylvania*." § In the above quotation, Mr. Edwards says, the birds are "never" observed to return the same way that they went. This is, certainly, a mistake. Our swallows, which are migratory birds, as I think I have rendered very probable in the Appendix, ‖ are generally seen on their return southward, in the autumn, far to the east of the first ranges of our mountains. But independently of the swallows, the same may be said of many other species of birds. Indeed, I believe it may confidently be said, that most of the passenger-birds, which pass by us, in the spring, return, in the autumn, southward, the same way they went. This observation certainly applies to the Anas canadensis (Wild-Goose), the Columba migratoria (Wild-Pigeon), the Fringilla tristis (Yellow-Bird), Motacillia Sialis (Blue-Bird), Loxia Curvirostra (Crossbill), Fringilla ——— (Hemp-Bird), and at least fifty others, which are *constantly* observed on their migrations southward, in the neighbourhood of Philadelphia. These autumnal flocks sometimes consist of many thousands of individuals together; and it has been observed, that birds of different species sometimes migrate in the same bodies.

§. XIV.

It must not be imagined, that the birds which I have enumerated arrive uniformly, every year, at the times which are prefixed to their names, in the first column. I have long been persuaded, that the uniformity of the arrival of the migratory birds, in any given country, is not so great as many naturalists have imagined. The attention which I have paid to this curious subject in Pennsylvania, has convinced me, that my suspicion was well founded. The migration of birds is not a "determinate instinct,¶" but an act of volition, or will. Hence, the seasons and other circumstances will greatly regulate the arrival of birds in, and their flight or removal from, a particular country. Sometimes, there is a difference of three weeks or a month between the arrival, or appearance, of the same species, in two different years. This will appear from the following instances, which are selected from many others.

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* Travels, &c. Page 287.

† I ever have been a friend to the study of the two ancient languages, the Greek and the Latin, which are taught in our schools. They are absolutely necessary to the complete attainment of some sciences, such as natural history (including botany), and medicine; and I think with Erasmus, that a physician should be ashamed not to know them. But too much time is dissipated in the acquisition of these languages. If I do not greatly mistake, this truth begins to be acknowledged among us. *Video meliora.* If only one-sixth part of the time which is consumed in acquiring the Greek and Latin languages (particularly the former), were appropriated to the study of natural history, in less than twenty years, the animal, the vegetable, and the mineral productions of the United-States, would be pretty well investigated. But what, in the cultivation of a science so extensive, and so difficult, can be expected from the labours of two or three individuals, unaided by the public, and tramelled by professional engagements and pursuits?

‡ Gleanings of Natural History, Part II. P. 202.

§ Arctic Zoology. VOL. II. P. 100, 101.

See Page 16.

¶ Dr. Adam Ferguson.

§. XV.

From an inspection of these Tables, it will appear, that the Alauda alpestris, or Shore-Lark, the Alauda rubra, or Red-Lark, the Fringilla tristis, or Golden Finch, and some others, were not observed, in the vicinity of Philadelphia, earlier than the twelfth of March, 1791: whereas the same birds were seen, in the same neighbourhood, as early as the twenty-eighth of February, the following year, on their passage northward.

I have placed the Anas canadensis (Wild-Goose) between the 15th and the 18th of April, 1791, but in the year 1794, these birds were observed, on their migration from the south, as early as the 3d of March. In the first mentioned year the Ardea Herodias, or Great Heron, was not observed before the 15th or 16th of April; but in the latter year, numbers of these birds were seen as early as the 1st of April. Many other instances might be mentioned.

§. XVI.

How much the movements of birds from one country to another depend upon the state of the seasons, will appear from different parts of this little work; particularly from the Third Section. Here we find, that during our mild winters, several of those species of birds which, in general, are undoubtedly migratory, continue the winter through in the neighbourhood of Philadelphia. Such, which I have denominated the OCCASIONAL, or ACCIDENTAL, RESIDENT BIRDS, are the Ardea Herodias, or Great Heron, Columba carolinensis, or Turtle-Dove, the Fringilla melodia, and several others: I doubt not many more than I have mentioned. The Columba migratoria, Passenger-Pigeon, commonly returns from the northward late in the fall, and continues with us a few days, or weeks, feeding in our fields upon the seed of the buckwheat,* or in the woods upon acorns. But if the season be a very mild one, they continue with us for a much longer time. This was the case in the winter of 1792—1793, when immense flocks of these birds continued about the city, and did not migrate farther southward, until the weather became more severe in the month of January. The winter of 1792—1793, was one of the mildest that had ever been remembered in Pennsylvania. It is a common observation in some parts of this state, that when the Pigeons continue with us all the winter, we shall have a sickly summer and autumn. There is, perhaps, some foundation for this notion. Large bodies † of these birds seldom do winter among us unless the winter be very mild; and the experience of some years has taught us, that such winters are often followed by malignant epidemics. The mild winter of 1792—1793, was succeeded by a dreadful malignant fever, which destroyed between four and five thousand people in Philadelphia; and I am assured, that the same fever in 1762 was preceded by an extremely open winter, during which the pigeons remained about Philadelphia, and in other parts of the state. In the hands of a poet, a Lucretius, or a Virgil, this coincidence between the accidental hiemation of the pigeons and the appearance of the yellow-fever might be wrought up into a system of beautiful extravagance.

§. XVII.

If birds, in their migration from one country to another, were impelled by a "determinate," or necessary instinct, the periods of their arrival and departure would be more uniform and fixed. But we have seen, that there is a considerable difference in these respects, even in two years immediately in succession. Such great regularity in the migrations of these animals by no means accords with those accommodating habits, which the naturalist discovers in his investigation of the manners of all animals; those habits which have been given to them, as to us, by a Creator whose works so loudly proclaim his wisdom, and the extent of his benevolence and attention to the innumerable living objects which he has formed.

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* Polygonum Fagopyrum.

† I say "large bodies," for I believe individuals of these birds continue with us almost every winter.

§. XVIII.

It is highly probable, that the periods of the migrations of birds will be found to be more or less uniform in proportion as the climates of the countries to which they migrate are more or less variable in their temperature. It is, perhaps, upon this principle, that we are to explain the difference of the times of the arrival and departure of the birds of Pennsylvania, and other parts of North-America. The climates of these countries are extremely variable; I suppose more so than most other countries that are known to us. If, as has been supposed by many writers, the hand of man, by clearing and by cultivating the surface of the earth, contributes essentially to the greater uniformity in the temperature of climates, it is reasonable to conjecture, that the time will come, when the periods of the migrations of our birds will be more constant and fixed. For in North-America, especially the United-States, the progress of population, and of clearing and cultivating the earth, is more rapid and immense than in any other portion of the world.

§. XIX.

It would be a very curious subject of inquiry,—What changes have taken place in the periods of the arrival and disappearance of the passenger-birds, in those countries in which observations have long been made by the ancient poets, and by naturalists? Perhaps, an investigation of this question would, in some degree, illustrate the changes which climates are said to have undergone. Thus, the time of the Swallow's coming into Italy, is particularly mentioned both by Columella and by Pliny,[*] and it may be gathered also from a beautiful passage in the Georgics of Virgil.[†] Do the periods mentioned by these writers correspond with the periods of the arrival of this bird, in the same country, at present? If the climate of Italy, within the last seventeen or eighteen hundred years, has altered as much as it is, by many ingenious men, thought to have done, it is not likely that the Swallow now visits that country at the same time it did formerly, in the days of Virgil, and the naturalists whom I have mentioned. I am sorry that I cannot, without some trouble, ascertain the question.

§. XX.

The fourth column of the tables will enable the curious naturalist to form some idea of the temperature of our climate (by showing the time of leafing, flowering, planting, &c. of a considerable number of vegetables, both native and foreign); at the same time, that it will point out, in a number of instances, the coincidence between this progress in vegetation and the arrival and disappearance of the migratory birds. This last has long been deemed an interesting subject by naturalists, though I am inclined to think, that they have often imagined, that this coincidence is greater than it really is.

§. XXI.

I will not deny, that there is a very remarkable conformity between the vegetation of some plants and the arrival of certain birds of passage. This, perhaps, is especially the case in those countries the climates of which are the most regular in their seasons. Linnæus has observed, that the Wood-Anemone (Anemone nemorosa) blows in Sweden on the arrival of the Common Swallow,[‡] and that the Marsh-Marygold (Caltha palustris) blows when the

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[*] Columella says, the Swallow visits Italy about the twentieth or twenty-third of February. The following are his own words: "Decimo Calendas Martii leo definit occidere, venti septentrionales, qui vocantur ornithiæ, per dies triginta esse solent, tum et hirundo advenit." In another place, he says, "Septimo Calendas Martii ventosa tempestas, hirundo conspicitur." *De Re Rustica.* Pliny says, this bird appeared on the twenty-second of February: "Octavo calendas Martii hirundinis visus."

[†] Georgic. IV. 305—307.

[‡] Hirundo urbica.

Cuckoo sings.[*] The amiable Mr. Stillingfleet remarked nearly the same coincidence in England. Dr. Darwin observes, that the "word Coccux in Greek signifies both a young fig and a cuckoo, which is supposed to have arisen from the coincidence of their appearance in Greece."[†] Many instances of a similar coincidence might be pointed out between the flowering of our Pennsylvanian vegetables and the arrival of certain birds. Thus it is observed, that the Wood-Cock (Scolopax Gallinago) commonly visits us when the American Elm (Ulmus americana) is in full blossom: that is between the 8th and 18th of March.

§. XXII.

It is well known, that the ancients were of opinion, that the arrival of certain birds of passage afforded one of the best and safest directions for the planting of different kinds of vegetables, and for other agricultural purposes. Thus Virgil, who was at once a naturalist and poet, tells us, that the best time for planting vineyards (in Italy) is when the White bird, or Storck, appears:

Optima vinetis satio, cum vere rubenti
Candida venit avis longis invisa colubris.
Georgic. Lib. II. 319—320.

I could point out, in the happy compositions of this great poet, other instances of a similar kind. The following is too beautiful to be omitted. The poet of Mantua is here describing the method and the time for killing a steer for the purpose of obtaining from its putrid gore a stock of bees, as was practised by the ancient Egyptians.[‡] He tells us this must be done early in the spring, before the meadows are painted with the colours of flowers, and before the Swallow builds its nest upon the rafters.

Hoc geritur, zephyris primum impellentibus undas,
Ante novis rubeant quam prata coloribus, ante
Garrula quam tignis nidum suspendat hirundo.
Georgic. Lib. IV. 305—307.

§. XXIII.

Although in Pennsylvania, and many other parts of the United-States, the arrival of our birds does not appear to be as uniform as it is in many of the countries of the old world;[§] the arrival of several species is, nevertheless, so regular, that it may be considered as the signal for commencing certain agricultural operations. Thus, the Muscicapa fusca, which we call Pewe, is one of the earliest Spring birds of passage, visiting the neighbourhood of Philadelphia about the middle of March. We have seldom hard frosts after the arrival of this bird, which seems to give a pretty confident assurance to the farmer, that he may very soon begin to open the ground and plant. It is an old observation, in Pennsylvania, that when the Whip-poor-will (Caprimulgus virginianus) arrives, it is time to go barefooted; that is, the spring season is pretty far advanced, and sufficiently warm to admit of laying aside the use of shoes, without much inconvenience. This adage originated in the days of greater simplicity than the present. Some of our Indians believe, that this bird is a messenger sent to call their attention to the planting of the ground. Accordingly upon the arrival of the Whip-poor-will, they say to one another, "the *Weecolis*[‖] is come: it is planting time;" and while the bird is uttering the sound of whip-poor-will, or weecolis, they will repeat the word "*Hackibeek*," which is "plant the ground."

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[*] Amænitates Academicæ. Vol. IV.

[†] Botanic Garden. Part II. Canto I. note.

[‡] It appears to have been a very general opinion among the ancients, that Bees were produced from the putrid bodies of animals. A very curious passage in the 14th chapter of the book of Judges shows the high antiquity of this notion. After Sampson had killed the young Lion, "he turned aside to see the carcase of the lion: and behold there was a swarm of Bees and honey in the carcase of the lion." The Greeks believed, that these insects arose from putrid bullocks, and hence they gave them a name expressive of this supposed origin. According to Archelaus, bees proceed from bullocks, and wasps from horses. So rude were the opinions of the ancients respecting the origin of these insects. It is certain, however, that putrid carcases are often visited by bees, and it is not unlikely that from these carcases, they may be able to procure honey. It was, doubtless, from observing, that swarms of bees frequent the dead bodies of animals, that the ancient Egyptians had recourse to such bodies for the purpose of repairing the total loss of their honey-making insects. The manner of doing this is beautifully related by Virgil, who traces back the practice to its first source. *See Georgic. Lib. IV. beginning at line 281.*

[§] See Page 10.

[‖] This is the Delaware-Indian name for this bird.

§. XXIV.

I am of opinion, that all the birds which are mentioned in the tables, with the exception of the Alauda magna (Meadow-Lark), Tetrao virginianus (Partridge), and a very few others, are migratory birds, or birds of passage. But I do not expect that this opinion will be universally received by naturalists. In almost every country in which natural history has been cultivated, the places of retreat of birds at the times of their disappearance has been a matter of dispute. The question concerning the Swallows is not yet settled; and in this country the notion which I deem an erroneous one with respect to these birds is gaining ground.* The sportsmen find still greater difficulty in discovering the place of retreat of their favourite "Rail," the Rallus virginianus;† whilst some of the Indians assure us, that the Vultur aura (Turkey-Buzzard) passes its winters in the hollows of trees, &c.

§. XXV.

Some ingenious gentlemen, with whom I have conversed on the subject, are even of opinion, that but a very few of our birds are, strictly speaking, birds of passage. They imagine, that some of these birds, at the coming on of cold weather, pass into a torpid state, whilst others merely take shelter from the inclemency of the weather, in close thickets, in the hollows of trees, rocks, &c. without becoming torpid. This opinion may be supported by plausible arguments. Some species of Swallows have occasionally been found in a torpid state. In mild winters, several of those birds which are thought to be commonly migratory, are seen among us; and even after the disappearance of some species, such as the Motacilla Sialis, or Blue-Bird, one or two warm days in the winter time will bring them back again. This notion is likewise favoured by the torpid state into which so many of our animals pass, and continue, during the winter season; such as different species of Lizards, Tortoises, Frogs, Serpents, and Insects. Nor is it merely the animals with cold blood (*Sanguis frigidus*) that become torpid. Some of our quadrupeds fall into a similar state. Such are the Arctomys Monax, or Maryland Marmot (best known in the United-States by the names of Ground-Hog, and Wood-chuck), and some of the smaller animals of the order *Glires*, particularly some species of Dipus, or Jerboa. Other species, again, that do not become torpid, keep themselves confined in close quarters, during the greater part of the winter-season. Such are some of the species of Squirrel, the Didelphis Opossum (Opossum), and others.

§. XXVI.

These various facts, it must be confessed, seem to give some degree of plausibility to the notion, that our birds *hiemate*,‡ or take up their winter-quarters among us, and that they do not migrate to a distance. Still, however, I cannot but adopt the latter notion. The complete disclosure of the fact, that the serpents, frogs, some quadrupeds, &c. become torpid, is rather an argument against the torpid state of our birds. Why should it be so much more difficult to discover the *latter* than the former in a torpid state, if *they* actually went into this state? Ten thousand serpents may be found in the torpid state as readily as a single Swallow, or Humming-Bird.§ It is recorded in some part of Mr. Boswell's ponderous *Life* of the late Dr. Samuel Johnson, that in a conversation which took place on the subject of the annual disappearance of Woodcocks, in England, the doctor observed, that the discovery of a few of these birds, in the summer time, only proved that the species does, in general, emigrate from the country. "*Exceptio probat regulam*," said the literary Hercules. I must confess, that to me this seems good sense. In like manner, the discovery of a few Swallows, a few Turkey-Buzzards, a single Humming-Bird, or a few birds of any other species, deemed migratory, in a torpid or other state, during the winter-season, seems rather to strengthen, than to weaken, the argument, that these birds are, in general, migratory birds. If all these birds continued among us, *many* of them would be found. The labours of one century, or more, in cutting down the timber of the forest, in blowing rocks, in draining mill-ponds, and marshes, would furnish more than five or six instances (and they not always quite so well authenticated as we could wish) of Swallows, &c. being found during the winter-season, in a benumbed state.

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* See Appendix I. P. 16.

† See Appendix I. P. 17.

‡ Naturalists, if not minute critics, will perhaps excuse the use of this word, which is at least significant, and is certainly not far-forced: a word derived from the Latin verb *Hiemo* or *Hyemo*, which is used by Cæsar and by Cicero, and which was defended by Erasmus, in an epistle to Tonstall.

§ See Appendix I. P. 18.

§. XXVII.

The argument derived from the torpid state into which so many of our animals are observed to fall upon the approach of winter, is of less weight than may, at first sight, be imagined. These animals are much less capable of migrating than the birds. If they were capable of making long journies to more favourable climates, I do not doubt they would make them. For I am persuaded, by a variety of experiments and observations which I have made, and may, perhaps, be induced to communicate to the public at some future period, that most of our hybernating animals go with reluctance into this state. I am even of opinion, that the state of torpidity of *many* animals is a state of pain and sufferance. This observation, at least, seems to hold good with respect to those animals (and I believe they constitute the greater number of the hybernating animals) which divide the winter between sleeping and waking: which, in other words, under the influence of cold and other causes, fall into a kind of profound sleep, during which the functions of the heart and the lungs are constantly performed; and even that of the stomach and intestines, in some measure, goes on: and during all which time, such animals are sensible to the influence of mechanical and other stimuli. This class of hybernating quadrupeds often, during the course of the winter, spontaneously awake from their slumber, take food, and fall into slumber, again. I do not, however, imagine, that animals, which are so torpid as to be incapable of being roused by the application of the most powerful stimuli, can be said to be in a state of pain and sufferance. But I believe, that the number of these *continual* sleepers is very small, even in the coldest climates.

§. XXVIII.

We are certain, that the torpid state of many animals is altogether an accidental circumstance: that is, it is not necessary to the species. I will not assert, with my learned and ingenious friend, Mr. Fabricius, that it is not natural to, nor coeval with, the species. It would be difficult to prove this position: but the position which I have advanced may be maintained. Animals of the same species have often a very extensive range over the world. Thus, the Ursus Lotor, or Raccoon, extends from Lake-Superior to the West-India-Islands, and the warm parts of South-America. The Opossum has a range not much less extensive. I trace the Rattle-Snake (Crotalus horridus) as far north as the Bay of Saguena, on Lake-Huron, and it is known in the country of Brasil. In such extensive tracts of country, these animals are exposed to very different degrees of temperature: on the one hand, to a great alternation of heat and cold; on the other hand, to a perpetual spring and summer. We ought not, therefore, to expect to find any of them torpid in the whole of this extensive range. In fact, several of those animals which become torpid in the northern parts of our country do not fall into this state in the southern and warmer climates.* As cold, however, is not the only cause of the torpidity of animals, we must not be surprized to find instances of animals becoming torpid in climates that are warm. Extreme heat, like extreme cold, seems to predispose the animal system to this state, particularly, perhaps, when there is a deficiency of food.

§. XXIX.

We see that quadrupeds and some other animals do occasionally, during severe winters, migrate to more southern climates. I am assured, that the Bears migrate, in great numbers, every autumn, across the Mississippi, going south (perhaps to the mountains of New-Mexico), in search of a milder climate. In the spring, they return again by

* See my account of the Dipus Americanus, or American Jerboa, in the 4th volume of the Transactions of the American Philosophical Society.

same rout. This migration of the bears is particularly observed at Manchac, on the Mississippi, about the latitude of ———. Many other quadrupeds perform similar migrations, both in the old and in the new world.

§. XXX.

Nothing seems more improbable than that a class of animals, such as the greater number of birds, which are capable of rapid and immense flights, should continue in a country in which the winter's cold is generally very intense, and in which, at the same time, the principal articles of their food are not to be procured. But I am far from denying, that some birds do pass their winters with us, either in a torpid state, or otherwise. Some species continue with us pretty regularly: and individuals of many species do occasionally continue with us. I have already observed, that "during our mild winters, several of those species of birds which, in general, are undoubtedly migratory, continue the winter through in the neighbourhood of Philadelphia."* It must be evident, therefore, that extreme cold is the great cause which compels these animals to retire south. But it is not the only cause. A deficiency of their proper food is another, not much less extensive. The greater number of our birds of the order of passeres feed upon insects, and the seeds and berries of vegetables. These, particularly the former, are not to be procured in the winter-season, in quantity sufficient to answer the demands of the immense number of birds which visit us at other seasons of the year. If our climate were more moderate than it is, and if an abundance of food were at all times to be procured, the number of our Resident Birds would, doubtless, be much greater than it is. It is evident, that a failure of their food is one of the great causes of the migrations of birds. Thus no sooner has the Zizania aquatica (Reed), which is one of the principal foods of the Rice-Birds, shed its seed, than these birds disappear, returning southwards.†

§. XXXI.

Independent on the mildness of the season, and the continuance of an abundance of their favourite kinds of food, individuals (and in some instances large flocks) of many different kinds of migratory birds pass their winters with us. Dr. Darwin observes, that "those swallows that have been hatched too late in the year to acquire their full strength of pinion, or that have been maimed by accident or disease, have been frequently found in the hollows of rocks on the sea coasts, and even under water in" a "torpid state, from which they have been revived by the warmth of a fire."‡ I suppose the learned doctor has not completely ascertained the fact, that such swallows were actually hatched later than others, or that they had been maimed by accident or disease. But it is highly probable, that the circumstances which he mentions are some of the causes which compel these and many other kinds of birds to pass their winters in climates, and in situations, very different from those in which the species at large, are, at such times, found.

§. XXXII.

Birds, in migrating, often lose themselves, particularly, perhaps, when they get into the currents of strong winds, to which they must sometimes be obedient. The large flight of Parakeets,§ which visited the neighbourhood of Albany, in the winter of 1780, was no doubt carried thither by a strong westerly wind. Such wanderers, it is probable, often go into a torpid state. It is said, that great numbers of Parakeets (I suppose the Psittacus carolinensis) are sometimes, in the winter-season, found torpid in the hollows of trees, in North-Carolina. Admitting the fact, is it not likely, that these birds have been wanderers, like the New-York flock just mentioned? Accidents of this kind are more frequent than is perhaps imagined. And I do not doubt that to such accidents we must ascribe *some* of the instances of swallows and other birds being found, in the winter-season, in a state of hybernation. It will be said, that this idea favours the notion, that birds are capable of entering into this state according to their situation. I do really suppose so. Perhaps all birds, all quadrupeds, in short all animals, are capable of this state. Nor are vegetables exempted from it. Those aquatic plants which, at the approach of winter, withdraw themselves to the bottom of the water, and, on the opening of the spring, emerge from their watery bed, may be denominated HYBERnating Vegetables. Perhaps this name might likewise be applied to those vegetables, which are natives of warm, southern countries, but gradually accommodate themselves to the rigorous winters of northern climates. I think, it was the late Mr. John Hunter who first ventured to conjecture, that man himself is not incapable of becoming torpid. Professor Fabricius is of the same opinion.* Nor is it at all improbable. In his internal structure, in the temperature of his blood, man differs in no very essential circumstances from some of those animals, which, in certain climates, almost constantly pass into the torpid state.

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* See page ix. §. XVI.

† See the Tables. Page 8.

‡ Zoonomia, VOL. I. Sect. XVI.

§ See Page vi. §. VII.

§. XXXIII.

It is important for our purpose, in the discussion of the question of the disappearance of birds, that many of those species which are believed to be migratory are annually seen on their passage; in the spring from the south to the north, and in the autumn from the north to the south. Some of these passengers migrate in immense flocks, whilst others go and return more individually. Mr. Bartram has seen, in the autumn, large flocks of all our four species of Swallows, on their return southward from Pennsylvania, through Carolina, Florida, &c. and in the spring on their return to the northward again.† The immense migrations of the Passenger-Pigeons are well known to every body in this country. I have already hinted at the great flights of Fringilla tristis, Motacilla Sialis, Loxia Curvirostra, Fringilla ———— (Hemp-Bird), and Anas canadensis, which are annually observed on their passage to the south.‡ I might mention a number of other species which move in similar bodies. I shall content myself with mentioning one. This is the Brown Crane of Pennant. This species is found in Mexico. It is described by Hernandez, who calls it, *Toquilcoyotl.* § They arrive in Florida and Carolina, from the south, in the months of Hebruary and March. The flocks, which are immense, are heard and seen very high in the air. Their phalanx is in the form of the letter ⊳. They pass over Pennsylvania, the Jersies, New-York, &c. and continue their rout as far north as Hudson's Bay, where they breed, and in the autumn retire to the south again. It is curious, however, that in their return, they do not move in the same form in which they came. They now form two or three circles intersecting each other, often changing the figure of the body, and forming again, as they are joined by other squadrons. Milton's description of the flight of the Common Crane ‖ of the old world equally applies to our species.

> "Part loosely wing the region: part more wise,
> In common, rang'd in figure wedge their way,
> Intelligent of seasons, and set forth
> Their aery caravan, high over seas
> Flying, and over lands with mutual wing
> Easing their flight. So steers the prudent Crane
> Her annual voyage, borne on winds;
> The air flotes as they pass, fann'd with unnumber'd plumes."
>
> Paradise Lost. Book VII. 425—432.

§. XXXIV.

I fear, I shall be thought to have taken up too much time in endeavouring to prove, that the greater number of our birds which disappear on the approach of winter, retire to southern and milder climates. Indeed, I am of opinion, that the migration of our birds is a fact so well established in the natural history of these animals, that it will not, in general, be doubted, except by those persons who are propense to doubt on every subject. In Asia, in Africa, and in Europe, where observations on this subject have long been made, the migration of many species has been completely established. In our own times, it has been particularly observed that many species visit different countries of Europe in the spring, and leave them in the autumn, in the same manner as other species visit and leave us at the same seasons of the year.

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[*] I am sorry, that I have not now an opportunity of examining Mr. Fabricius's memoir. I speak, from memory, of his opinions; but I hope I do not err.

[†] See Appendix I. P. 16.

[‡] See Page viii. §. XIII.

[§] Pag. 44. Cap. cxlviii.

[‖] Ardea Grus of Linnæus.

§. XXXV.

But it is said, we are unable to determine to what particular country these American birds of passage emigrate. This, with respect to many species, is strictly true. The observation, however, does not apply to all the migratory birds which I have mentioned.

§. XXXVI.

It is pretty certain, that some of our migratory birds do not remove to a very great distance. Of this number are those species which even in the depth of winter make their appearance among us when we have a few days of warm and open weather. The Blue-Bird is one of these birds.* It is probable that it does not often remove far. Perhaps, it goes to the sea-coast, where the temperature is more equable. Perhaps, however, these birds might, with more propriety, be considered as Residents. They, certainly, sometimes continue with us the whole winter. They may easily find a secure retreat from the winter's cold in the neighbourhood of the sea, and in close thickets of wood. Possibly, those species which are seen among us in mild winters, do not commonly retire as far south as the others. But this is only conjecture. We are certain that the Turdus Polyglottos, the Ardea Herodias, and several others, which *occasionally* winter in Pennsylvania, do not *always* winter in the southern states.

§. XXXVII.

The greater number of our migratory birds seem to remove to a very considerable distance from us. It is probable, that they pass their winters in the Carolinas, Georgia, the Floridas, Mexico, Surinam, Brasil, and all the warm parts of South-America, and the West-India-Islands. That, in general, they remove farther south than the southern parts of the United-States may safely be inferred from the very small number of our birds that is known to hiemate in this part of the country. Thus, the Swallows are no more observed to winter in the southern states than they are in Pennsylvania. And my friend Mr. Bartram assures me, that he does not know more than three of the Spring Birds of Passage that regularly winter in that part of the Union. These are the Muscicapa carolinensis (Cat-Bird), Columba carolinensis (Turtle-Dove), and the Turdus minor, or Little Thrush. They winter as far north as Cape-Fear, in North-Carolina. I do not suppose, however, that this is the whole list of the passenger-birds of Pennsylvania that continue the winter through in the southern states. Some have, probably, escaped Mr. Bartram's observation. At any rate, it will not be doubted, that during very mild winters many species continue in these states, since, during such winters, several species remain in Pennsylvania. I am assured, that the Rice-Birds often pass the whole winter in South-Carolina; and some gentlemen, with whom I have conversed on the subject, are even of opinion, that the species regularly hiemate in that state. This, however, I presume is a mistake. Mr. Catesby says the Mocking Bird hiemates in Carolina. That it does so occasionally, there can be little doubt: but it is pretty certain, that, in general, it is a migratory bird.† I suspect that, besides the three species mentioned by Mr. Bartram, the following birds pretty regularly hiemate in some of the southern states, particularly South-Carolina, and Georgia, and in the country of Florida: Oriolus phoeniceus, Gracula Quiscula, Picus auratus, Picus erythrocephalus, Fringilla pecoris, Alauda alpestris, Charadrius vociferus, Rallus virginianus, Scolopax Gallinago, and a good many of the *Anseres.*

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* See Section III. Page 12.

† Arctic Zoology. Vol. II. page 16. It is a curious fact, that previous to the cold winter of 1779-1780, or 1783-1784 (I am not positive which), the Mocking-Bird more commonly remained in the vicinity of Philadelphia and other parts of Pennsylvania, during the winter-season, than it has done since that time. I am inclined to think, that the extreme severity of the season I allude to has frightened these birds away. I am sensible, however, that this mode of explaining the fact will not appear satisfactory to those naturalists who believe, that the instinct of animals is a *vis impellens*, a "determinate" something; and that they never acquire any knowledge by experience. Very different is my opinion, as I shall fully show in a work on the Instinct of animals, in which I have been, for some time, engaged.

§. XXXVIII.

It appears from the works of Hernandez[†], Piso,[‡] and several other writers, that many of the passenger birds of Pennsylvania, and other parts of the United-States, are also natives of Mexico, Brasil, and other southern parts of America. I shall here mention a few of these birds; viz. the Vultur Aura, Psittacus pertinax, Oriolus phoeniceus, Oriolus Baltimore? Gracula Quiscula, Gracula Barita, Picus principalis, Picus carolinus, or Carolina Woodpecker, Alcedo Alcyon? Trochilus Colubris, Columba migratoria, Columba carolinensis, Columba passerina, Turdus Polyglottos, Turdus minor, Motacilla aurocapilla, Ampelis Garrulus, Emberiza Oryzivora, Emberiza Ciris,* or Painted Bunting, Tanagra cyanea, Tanagra rubra, Muscicapa Tyrannus, or Fork-tail-Flycatcher, Motacilla Sialis, Muscicapa Ruticilla, Motacilla cærulea, Motacilla Guira,* or Guira Warbler, Platalea Ajaja,* or Roseate Spoon-Bill, Ardea canadensis, or Brown Crane, Ardea Nycticorax? Tantalus Loculator,* or Wood-Ibis, Tantalus ruber,* or Scarlet Ibis, Charadrius Hiaticula,* or Ringed Plover, Charadrius Himantopus, or Long-Legged Plover, Hæmatopus Ostralegus, or Pied-Oyster-Catcher, Anas sponsa, and many others.[§] This circumstance renders it very probable, that many of our migratory birds pass their winters in these southern climates. How much is it to be wished, that some intelligent naturalists would furnish us with a list of the migratory birds of Mexico, Brasil, the West-India-Islands, &c. noting down, with care, the times of their disappearance from those countries, and the periods of their return to them. This would throw great light upon the difficult question which I am examining. Meanwhile, I have little doubt it will be found, that several of these birds visit us about the time they leave the warm countries just mentioned. Some of the birds which I have mentioned, in the above list, are known to migrate from and to Mexico, Brasil, and the West-Indies.

§. XXXIX.

My learned and candid friend Mr. Pennant (whose name I never mention but with pleasure and with gratitude; whose works have contributed much to my information, and whose example has stimulated me to the study of natural history) thinks there is the "greatest probability," that numbers of the birds of Kamtschatka are common to North-America, "and that they pass there the seasons of migration."[‖] I may observe, on the other hand, that it is likely that many of the North-American species pass into Asia and Europe, making between these continents and the new-world regular migrations. I think (for I write from memory) that it is Professor Biseke who has lately shown, that several of the North-American birds annually visit the neighbourhood of Mittau, in Courland. Among others, I particularly recollect that this writer mentions the Loxia Cardinalis, or Cardinal Grosbeak. In the farther investigation of the subject of the migration of birds, we shall discover, that many species (many more than is generally imagined) are common to the old and to the new-world; and that several species are occasionally passing into countries which before they had not visited. I am not afraid, that genuine naturalists will suppose, that the regularity of migration, which I have mentioned, between the two continents, is altogether imaginary. I certainly do not carry my birds as far, in search of food, of resting places, and of better climes, as did Cotton Mather, of New-England, who fancied that the Wild-Pigeons, on leaving us, repaired "to some undiscovered Satellite, accompanying the Earth at a near Distance."[¶]

[†] Rerum Medicarum Novæ Hispaniæ Thesaurus, seu Plantarum, Animalium, Mineralium Mexicanorum Historia, &c. &c. Romæ, 1651. Folio.

[‡] Gulielmi Pisonis, Medici Amstelædamensis, De Indiæ Utriusque Re Naturali et Medica Libri Quatuordecim. Amstelædami, 1658. Folio.

[§] In this list I have not given the English names of any of those birds which occur in the Tables. I have annexed the mark of doubt to a few which, perhaps, are not entirely the same species in the United-States and in Southern America. Those which are designated with an asterisk are not known in Pennsylvania. Mr. Pennant (*Arctic Zoology.* VOL. II. P. 107.) mentions the Motacilla Guira as a native of New-York.——The Emberiza Ciris has never (that I can learn) been seen farther north than Cape-Fear in North-Carolina, and not more than one mile from the salt water. The Spoon-Bill is sometimes (though rarely) seen about the mouth of Cape-Fear-River. They are common about St. Augustine, in East-Florida, and even as far north as the Savanna-River. Mr. William Bartram.

[‖] Arctic Zoology. VOL. II. P. 314

[¶] See the Philosophical Transactions, Abridg'd, &c. Vol. V. Part II. P. 161.

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The following TABLES are divided into two Sections. The first section contains an enumeration of the Spring and Summer Birds of Passage. All these, with the exception of a very few, which may be called Resident Birds, come from the south. The greater part of them are known to build and breed in Pennsylvania. At the close of the summer and in the autumn, they retire again to the south, and visit us in the Spring.

The second section is devoted to the Autumnal and Winter Birds of Passage. These passengers may be divided into two classes: viz. I. The Spring and Summer Birds of Passage, which are now on their return to the south. In strict propriety, these ought not to be considered as Autumnal and Winter Passengers: for they leave us in cold weather, either because they are incapable of supporting the severity of the winter-season, or because they cannot, during this season, procure a sufficiency of their proper and favourite food. Perhaps, for both these causes. II. The second class comprehends the real Autumnal and Winter Birds of Passage. These, compared with the Spring and Summer Birds of Passage, are very few in number. They all come from the north, and either winter with us or in the southern states. In the spring (frequently very early in the spring), they retire northerly, where they build, breed, and rear their young.

* * *

ERRATA.

In the Introduction, page ix. §. XVI. for Fringilla melodia, read Turdus Polyglottos, or Mocking-Bird.
page xvi. §. XXXVI. (in a few of the copies), the last line, for uniformly, read *always*.
In the Tables, page 2, for Scolopax candida. (Plover.) read Tringa Squatarola? Grey Sandpiper? (Plover.)
page 3, for Golden-Crowned Trush, read Golden-Crowned Thrush.
In Appendix I, page 16, under the head of Hirundo purpurea, for, when it supposed, &c. read, when it is supposed, &c.

1791.	Sect. I. The Spring and Summer Birds of Passage.		Progress of Vegetation.	Miscellaneous Observations.
March 1.	Oriolus phoeniceus.	Red-Wing-Oriole. (Swamp-Black-Bird.)	Dracontium foetidum in flower. The whole plant has a most offensive smell, very similar to that of the Viverra Putorius, or Polecat. Hence its common names, Skunk-Cabbage, Polecat-weed. I believe, the seed are very poisonous to birds, and other animals.	Thermometer, 27, in the morning: 35, at 2 o'clock in the afternoon.——Barometer, 30. Weather fair.
——12.	Muscicapa fusca (G.)	Black-Headed Fly-Catcher. (Pewe.)	Draba americana, in flower. This is commonly supposed to be the Draba verna of Linnæus. To me it appears to be a distinct species; and as it is common in a very extensive tract of North-America, I have named it as above.	Thermometer, 43, in the morning.——Barometer, 30. 1. Rain, N. E.—Fair.
	Alauda rubra (G.)	Red Lark.		
	Alauda alpestris.	Shore-Lark. (Sky-Lark.)		
	Fringilla domestica (mihi.)	Little Sparrow. (Titt, Chipping-Bird.)		
	Fringilla ferruginea (G.)	Ferruginous Finch. (Ground-Sparrow, Hedge-Sparrow.)		
	Fringilla albicollis (G.)	White-Throated Finch.		
	Fringilla melodia.	Black-Throated Sparrow.		
	Passer palustris of Bartram. *Travels.*	Reed-Sparrow.	Juncus campestris? in flower.	
	Fringilla exilis (mihi.)	Least Finch.		
	Fringilla tristis.	Golden Finch.		
	Fringilla pinus (mihi.)			
	Sitta canadensis.	Red-Breasted Nuthatch.		
	Picus auratus.	Golden-Wing Woodpecker. (Flecker, or Flicker.)		
	Gracula Quiscula?	Crow-Blackbird.		
——13.	Fringilla pecoris (G.)	Cowpen-Finch. (Cowpen-bird.)		Thermometer, 34, in the morning.—Weather fair.
——15.	Motacilla Sialis.	(Blue-Bird)		Thermometer, 47, in the morning: 53, at 2 o'clock in the afternoon.——Barometer, 29. 9. Rainy weather.
	Scolopax Gallinago.	Common Snipe. (Wood-cock.)	Betula Alnus? in flower.	The first Shad (Clupea Alosa) are commonly caught in the Delaware, Schuylkill, and other rivers, about this time.——The greatest height of the thermometer in March was 78. This was about 2 o'clock in the afternoon, of the 18th. On the 19th, it rained and snowed: but the snow thawed.
	Charadrius vociferus.	Noisy Plover. (Kill-dee, Kill-deer.)		

1791.	The Spring and Summer Birds of Passage.		Progress of Vegetation.	Miscellaneous Observations.
April 3.	Scolopax minor (G.)	Little Wood-cock. (Meadow-Snipe.)	Anemone Hepatica? Anemone Thalictroides, Ranunculus pennsylvanicus, Acer argenteum, Acer rubrum, Corylus rostrata, and Saxifraga nivalis? in flower. Salix —— in leaf.	Thermometer, 33, in the morning. – Barometer, 30. 1. The Sun eclipsed this morning. The eclipse began soon after sun-rise: over a little past eight o'clock.
——10.	Hirundo purpurea.	Purple Martin		Thermometer, 44, in the morning: in the afternoon, between 4 and 5 o'clock, 61.——Barometer 30. 1. Weather Cloudy,—Fair.
——15.	Hirundo rustica?	House-Swallow.	Peas and Beans are planted. Radishes, Lettuce, Onions, Parsnips, Carrots, Cabbages, &c. are sown.	Shad and Herring are now caught, in abundance, in our rivers.——Thermometer, 45, in the morning.——Barometer, 29. 5. Cloudy, then Fair.
	Hirundo ——	Little Bank-Martin.	Arabis lyrata in flower.	About this time, the Sturgeons (Acipenser Sturio?) are first seen in the rivers Delaware and Schuylkill, jumping out of the water.
	Falco piscatorius.	Fishing Hawk.		
	Certhia Pinus.	Pine-Creeper.	Flax is sown.	
	Fringilla graminea (G.)	Little-Field-Sparrow	Fumaria Cucullaris in flower.	
	Motacilla coronata (G.)	Golden-crowned Warbler.		
	Motacilla cærulea (G.)	Cærulean Warbler.		
	Ardea Herodias.	Great Blue or Ash coloured Heron.		
	Alcedo Alcyon.	Belted Kingfisher. (Kingfisher.)	Zanthorhiza apiifolia in flower.	
	Colymbus septentrionalis.	Greater Loon, or Diver. (Loon.)		
	Colymbus migratorius of Bartram. *[illegible]*	(Eel-Crow.)		
	Colymbus Podiceps.	Pied-Bill Grebe. (Dobchick.)		
	Anas canadensis.	Canada-Goose. (Wild-Goose.)	Epigæa repens (sometimes called Ground-Ivy) in flower.	
	Anas bucephala.	Buffel-Duck.		
	Anas discors.	White-Faced Teal.		
	Anas fusca.	Blue-Winged Teal.		
	Anas subcærulea of Bartram. *[illegible]*	(The Blue-Bill.)		
	Anas Boschas.	Mallard-Duck.		
	Mergus cucullatus.	Fan-crested-Duck.	Dirca palustris (Leather-wood, Moose-wood), in flower. Aquilegia canadensis, Amygdalus Persica, Pyrus communis, Prunus Cerasus, Ribes rubra, Viola cordata, Mespilus canadensis, Sanguinaria canadensis (Puccoon, Indian Paint), and Salix———, in flower. Acer rubrum and glaucum (of Marshall) in leaf. Caltha palustris, Erythronium carolinianum, Viola palmata, Viola pedata, Viola tomentosa, Viola lutea, Viola alba, Viola pallida,	
——18.	Anas sponsa.	Summer-Duck.		Thermometer, 49, in the morning.——Barometer, 29. 7½. Weather fair.
	Columba carolinensis.	Carolina-Pigeon. (Turtle-Dove.)		
	Columba migratoria.	Passenger-Pigeon. (Wild-Pigeon.)		
	Scolopax candida.	(Plover.)		The Tree-Frog (Rana arborea?) chatters. Tetrao virginianus (Partridge, Quail) pair.—The male whistles.
	Turdus rufus.	Ferruginous Thrush. (Thrush, Thrasher.)		The Bull-Frog (Rana ocellata) begins its amours. The male roars morning and evening.

	Ardea Nycticorax.	Night-Heron. (Qua-Bird.)	Sambucus canadensis, Claytonia virginica, and Houstonea cærulea, in flower.	
	Motacilla Troglodytes?	(Marsh-Wren).		
———20.	Ardea virescens.	Green-Bittern, or Poke.	Strawberries (Fragaria vesca) in flower.	Thermometer, 44, in the morning.——Barometer, 30. 0. Weather fair.
———23.	Certhia familiaris (mihi.)	House-Wren, Sociable Wren.	Oats are sown.	Thermometer, 59, in the morning: 71, at 4, in the afternoon.——Barometer, 30. $0\frac{1}{2}$. S. Wind.—Cloudy.
	Fringilla erythrophthalma.	Towhee-Bunting. (Towhee-bird, Ground-Robin, Chewink.)		
	Hirundo pelasgia.	Aculeated Swallow. (Chimney-bird.)		
	Caprimulgus virginianus (G.)	Whip-poor-will, or Night-hawk.	Pulmonaria virginica, Orontium aquaticum (Silver-Weed) in flower.	
	Lanius Tyrannus.	King-bird. Tyrant.		
	Oriolus Baltimore.	Baltimore-Oriole, Baltimore-Bird (Hang-Bird).	Anemone nemorosa, Anemone quinquefolia, and Ranunculus repens in flower.	
	Oriolus spurius.	Bastard-Oriole, Bastard-Baltimore.		
	Muscicapa carolinensis.	Cat Fly-Catcher (Cat-bird.)		
	Motacilla varia.	White-Poll Warbler.		
———27.	Parus luteus.	Summer Yellow-bird.	Pyrus Malus, Cercis canadensis (Sallad-Tree), Azalea nudiflora (Wild-Honeysuckle), Lonicera media, Laurus Sassafras, Geranium maculatum, in flower.	A species of Scarabaeus, called the Spring-Beetle, now appears. In the evening, millions of them swarm over orchards and forests, performing their amours. They occasion, at this time, a noise not unlike distant thunder. It is a reddish-brown Beetle, $\frac{3}{4}$ of an inch in length, and of proportionable thickness.
———28.	Motacilla fluviatilis.	Water Wag-tail.		
	Muscicapa fusca (Catesby.)	Warbling Wren, or Green-Wren.		
———30.	Trochilus Colubris.	Red-throated Honeysucker (Humming-Bird)		Various species of Libellula, Papilio, Formica, and other insects, appear in abundance. The Hermit (Apis ——), or Borer, comes forth from its cell.
	Turdus Trichas (G.)	Yellow-breast Warbler. (Maryland yellow-throat).		Thermometer, $52\frac{1}{2}$, in the morning: $67\frac{1}{2}$ in the afternoon.——Barometer, 29. 8.—Cloudy.
	Picus erythrocephalus.	Red-headed-Wood-pecker.	Æsculus Pavia and Esculus flava (Buck-Eye) in flower.	
	Motacilla aurocapilla.	Golden-Crowned-Thrush.		
	Tanagra rubra.	Canada Tanager (Swamp-Red-Bird?)		
	Muscicapa subfusca of Bartram.			
	Muscicapa olivacea.	Red-eyed Fly-catcher.		The greatest height of the Thermometer in April was 79. This was on the 26th, at $2\frac{1}{2}$. in the afternoon. The greatest height of the

	The Spring and Summer Birds of Passage.		Progress of Vegetation.	Miscellaneous Observations.
				Barometer was 30. 4. This was on the 21st, at which time the weather was Hazy.
May 1.	Muscicapa Ruticilla.	Black-headed Warbler.	Podophyllum peltatum (May-Apple), Fothergilla alnifolia, Halesia tetraptera, Leontice Thalictroides, Hydrastis canadensis (Yellow-root), Dodecatheon Meadia, Calycanthus floridus (Sweet-Scented-Shrub), Æsculus Hippocastanum, Cornus florida (Dogwood), in flower.	The Glow-Worm (Lampyris noctiluca? the female) begins to sparkle in the grass, in humid situations, during the evening.
	Turdus minor (G.)	Wood-Thrush, Little Thrush.		Thermometer, May 1st, 56, in the morning: 79, in the afternoon.——Barometer, 29. 8. Foggy. Fair.
	Anas Bernicla.	Brent-Goose.		
	Muscicapa crinita	Crested Fly-Catcher.	Plant Indian Corn (Zea maiz), Potatoes (Solanum tuberosum), Sweet Potatoes (Convolvulus Batatas), Melons, Cucumbers, Squashes, Water-Melons, Pumpkins, and French or Snap-short Beans.	The Apis Crabo (called Hornet) begins to build its curious citadels or nests.
	Muscicapa viridis (G.)	Yellow-Breasted Chat.		
	Falco sparverius	Sparrow-Hawk.		
——12.	Tanagra cyanea.	Indigo-Bunting, Blue Linnet.		Thermometer, 61—76, in the morning: 81—82, in the afternoon.———Barometer, 30. 2.
	Cuculus americanus.	Cuckoo of Carolina.		Ampelis Garrulus, in flocks, visit the double flowered Cherry-trees, feeding upon the petals of the flowers.
	Alauda magna.	Crescent Stare, Meadow-Lark.		
	Parus americanus.	Creeping Titmouse, Finch Creeper.		
———15.	Motacilla mitrata.	Hooded Titmouse.	Acer glaucum and Acer rubrum shed their ripe seed.	Thermometer, 69, at noon.———Barometer, 30. 0.
	Motacilla canadensis (G.)	Black-throat Warbler, Blue Fly-Catcher.		
	Tringa macularia (G.)	Spotted Sandpiper.		A species of Chrysomela? called Cucumber-Fly, now begins its ravages upon the vines of the Cucumbers, Musk-Melon, Water-Melon, Pompion, &c. but especially upon the Cucumber. They scrape off the rind, and suck out the juice. Against the depredations of this insect (which has an extensive range through North-America) nothing has been found so beneficial as a mixture of tobacco and capsicum (Red-Pepper) sprinkled over the vines.
	Motacilla chrysoptera	Golden-winged Fly-Catcher.		
	Motacilla petechia.	Red-headed Warbler.		A species of Lampyris, called Fire-Fly, begins to illuminate the woods, meadows, gardens, streets of the city, &c. The light of this insect continues through the whole night, and for several months.
	Motacilla virens (G.)	Green Warbler.		
	Motacilla pennsylvanica.	Bloody-side Warbler.		
———18.	Muscicapa rapax of Bartram. *Travels.*	Olive coloured Fly-catcher, or Lesser Pewe.		The young Blue-Birds (Motacilla Sialis) now first venture upon their wings.

	Ardea cinerea.	Marsh-Bittern.	The Rye begins to flower.	
——20.	Emberiza oryzivora.	Rice-Bunting, (Rice-Bird, Reed-Bird, Bob-Lincoln?)	Magnolia glauca (Common Magnolia, Beaver-Tree), Liriodendron Tulipifera (Tulip Tree, Poplar), Cornus alterna, Magnolia tripetala (Umbrella-Tree), Magnolia acuminata (Cucumber-Tree), Rubus occidentalis, Rubus odoratus, Rubus hispidus, Chionanthus virginicus (Fringe-Tree), Vaccinium frondosum, Andromeda mariana, [illegible], Convallaria Polygonatum, C. racemosa, C. bifolia, Phlox maculata, Phlox subulata, Phlox alba, Sisyrinchium Bermudiana, Aristolochia sipho, Hyoseris virginica, Hypoxis erecta, Geranium carolinianum, Kalmia angustifolia, Kalmia latifolia, and Ledum serpyllifolium, in bloom.	
	Rallus carolinus (G.)	Soree Gallinule.		
	Rallus virginianus.	Virginian Rail.		
	Rallus crepitans (G.)?	Clapper-Rail, (Meadow-clapper?)		
	Fulica atra.	Common Coot.		
	Ardea parva of Bartram. *Travels.*	The Little Striped Bittern.		
——25.	Alauda Calandra.	Calandra-Lark. (May-Bird, Grass-Bird.)	Andromeda aborea (Sorrel-Tree), Fagus americana (Chesnut), Juglans nigra (Black Walnut), Juglans cinerea (Butternut), Aralia nudicaulis (Sarsaparilla), Berberis vulgaris, Platanus occidentalis (Button-Tree, Sycamore), Cratægus Crus galli, Pisum sativum, Veratrum luteum, Salvia lyrata, and many other vegetables, in flower.	
	Motacilla vermivora. (G.)	Worm-Eater.		A species of Curculio (Fruit-devouring Weavel) is now busy, at night-time, in darting and depositing its eggs in the young fruit of Plumbs, Cherries, Peaches, Apples, Pears, Mespilus, Juglans, &c.
——28.	Certhia floridana (mihi).	Great Yellow-throated-Wren of Florida.	Strawberries and early Cherries ripening.	The Scarabaeus nitidus, called Gold-Smith, now appears in great numbers. The greatest height of the Thermometer, in this month, was 90½. This was in the afternoon of the 30th.
June 20.	Vultur aura.	Carrion-Vulture. (Turkey-Buzzard.)	Saururus cernuus (Swamp-Lillies), Ceanothus americanus (New-Jersey-Tea), Bignonia Catalpa (Catalpa), Actæa racemosa (Black Snake-root), Pyrola rotundifolia, Tilia americana, Ruta graveolens, in flower.	This is the most interesting season of the year for the music of our birds. *"Ipsi lætitiâ voces ad sidera jactant* *Intonsi montes: ipsæ jam carmina rupes,* *Ipsa sonant arbusta."* VIRGIL.
July 4.	Ardea alba	Great White-Heron.	Pyrola umbellata, Pyrola maculata, Lithospermum virginianum, Circæa lutetiana, Chenopodium incanum, Typha latifolia, in flower.	Most of our birds have now done rearing their young, and of course their melody begins to cease.

1791. July.	The Spring and Summer Birds of Passage.		Progress of Vegetation.	Miscellaneous Observations.
	Ardea aequinoctialis. Falco furcatus.	Little White-Heron. Swallow-tailed Falcon.	Indian corn (Zea Mays) in blossom.	About this time, a few days sooner or later, the Coluber constrictor, or Black Snake, and other serpents begin to shed their old skins.
——15.			Cherries still plentiful.	Thermometer, 76, in the morning: 88, at 2 o'clock in the afternoon.
——16.				Thermometer, 89, in the morning: 88, at 2 o'clock in the afternoon.
——20.			Asclepias decumbens (Pleurisy-Root, Flux-Root), Lilium superbum, Lilium Philadelphicum, Phlox paniculata, Nymphea odorata, Bignonia radicans, Hypericum Kalmianum, Callicarpa americana, Spigelia marilandica, Vitis arborea, &c. in flower.	Thermometer, 80.——Barometer, 30. 0½.
——30.			Cucumbers, Melons, Squashes, and Water-Melons are now ripe. Green Peas in plenty. Lobelia Cardinalis, Eupatorium giganteum, Eupatorium cælestinum, Eupatorium perfoliatum, and Glycine Apios (Wild Potato), in flower.	Thermometer, 70.——Barometer, 30. 0.—Cloudy. Bruchus Pisi (Pea-Fly) lays its eggs in the green pea-pods. It is chiefly occupied in this business at night-time, and during cloudy days.
August 12.	Emberiza oryzivora.	Rice-Bunting (Rice Bird, Reed-Bird.) The females exclusively? make their appearance.	Zizania aquatica in flower. In the vicinity of Philadelphia, where this plant grows spontaneously, it is best known by the name of Reed. Another species, the Zizania palustris? grows very plentifully on the margin of our northern lakes. Its seed is the principal vegetable food of the Malhomines, and other northern Indian tribes. This last kind, which the French in America call "Folle avoine," is next to the Indian corn, the most important vegetable of the order Cerealia hitherto discovered in North-America. It ought to be *cultivated* in America, and might be transferred, with much advantage, to some of the countries of Europe.	Few birds are now heard to sing, except the Tanagra cyanea, Turdus Polyglottos, Turdus migratorius, Turdus rufus, Turdus minor, Muscicapa carolinensis, Oriolus spurius, and a few others. None of these, however, are so constant, and regular in concert, or sing with such animation, as they did in the last and preceding month, except the Tanagra cyanea. The mornings and evenings begin to be cool.
——20.			Oat-harvest, and the second crop of hay. Buckwheat (Polygonum Fagopyrum) is sown.	The Ka-te-did-it (Gryllus laurifolius?) begins its cheerful chattering, in the midst of our thickest forests, and in the heart of our city, &c. *"Et cantu querulæ rumpent arbusta cicadæ."* VIRGIL.

——25.			Fagus pumila (Chinquapin) ripens its fruit.	About this time, the Corvus cristatus, called Blue-Jay, having reared its young, appears, in great numbers, waiting for the nuts of the Beech, Chinquapin and Chesnut, to feed upon, when ripe, and to store them up in its winter quarters.——About this time, that is from the 25th of August to the beginning of September, the Hirundo rustica? or House-Swallow, the Hirundo pelasgia (Chimney-Bird), the Hirundo purpurea (Purple Swift), and the Caprimulgus virginianus (Whip-poor-will), disappear, and I believe retire far southward.
	SECT. II. AUTUMNAL AND WINTER BIRDS OF PASSAGE.		PROGRESS OF VEGETATION.	MISCELLANEOUS OBSERVATIONS.
——31.				Thermometer, 71, in the morning: 81, at 2 o'clock in the afternoon.—The greatest height of the Thermometer in August was on the 30th, when it was 93, in the afternoon.—Same day, the Barometer 30. 0. Weather fair.
September 1.			Zizania aquatica ripens its seed.	Emberiza oryzivora, Oriolus phoeniceus and Gracula Quiscula? appear in immense flocks. The first of these birds frequents the Zizania, to feed upon its seed. They also feed upon the seed of the Fox-tail-grass, the Polygonum sagittatum (Tear-Thumb, Cow Tongue), &c. The latter destroy maize, oats, rye, barley, &c. that is stacked out of doors.
——12.	Parus domesticus.		Amaryllis lutea, Colchicum autumnale, some species of Rudbeckia, Helianthus, Coreopsis, Helenium autumnale, Bupthalmum helianthoides, some species of Solidago, Silphium, and Lobelia siphilitica, in flower.	
	Parus bicolor.	Crested-Titmouse.		
	Parus virginianus.	Virginian Titmouse, Yellow-Rump.		The Yellow-Rump and the Prib-Chatterer at this time, arrive from the north, to feed upon the berries of the Red-Cedar (Juniperus virginiana), which are now ripening.
	Ampelis Garrulus.	Prib-Chatterer. (Cedar-bird.)		
	Anas querquedula.	Blue and green wing Teal.		Most of the summer birds of passage have now disappeared. The Cat-Bird, the Fox-coloured thrush, Mocking Bird, Pewe, Olive-coloured Fly-catcher, Summer Yellow-bird,
——25.	Anas nigra.	Black Duck.		
	Anas Boschas.	Mallard.		
	Parus virginianus.*	Virginian Titmouse.		

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* Great numbers of these birds appear again, along with the Ampelis.

1791.	Autumnal and Winter Birds of Passage.		Progress of Vegetation.	Miscellaneous Observations.
				Golden-crowned Thrush, and the Wood-Thrush are still seen. All these, however, are soon to take their leave of us, for some time.
September 26.	Anas canadensis.*	Canada-Goose.	The Zizania aquatica is now full ripe. Hibiscus coccineus, Pentapetes phoenicea, Hibiscus pentacarpos, Corchorus olitorius, Lagerstroemia indica, Convolvulus coccineus, Gentiana ciliata, Gentiana serotina, Gentiana saponaria, Gossypium herbaceum, Salvia coccinea, Eupatorium cœlestinum, Eupatorium scandens, Eupatorium album, Eupatorium serotinum, Euphorbia heterophylla? Monarda punctata, Clematis crispa, Celosia coccinea, Celosia argentea, and Tagetes erecta, in flower.	At this time the Rice-birds are very fat, and delicious food. As soon as the Zizania has shed its seed, these birds disappear. Although they prefer this grain to any other that we have in our northern states, (the seed of the Polygonum sagittatum, perhaps excepted), and although it seems to be principally this grain which invites them to the north, yet they arrive above two months before it is ripe. Meanwhile, they feed upon various sorts of grass-seed, particularly the seed of the Fox-tail-grass. Upon leaving us in autumn, the Rice-birds return to the southward, and stop by the way, in Carolina, Georgia, and Florida, to feed with their friends, upon the remains of the Rice. A second crop of this grain (Oryza sativa), shooting up from the stubble, affords them a plentiful gleaning, till late in the autumn, or till frost, when they resume their migrations southward, and entirely disappear, until the return of the next season.
——— 29.	Picus varius.	Yellow-Bellied Woodpecker.		
October 9.	Motacilla Regulus. Motacilla Calendula. Muscicapa carolinensis. Scolopax Gallinago.	Golden-crowned Wren.* Ruby-crowned Warbler.* Cat-Bird.† Wood-Cock.†	Phytolacca decandra, some species of Similax, Vitis labrusca, Juniperus virginiana, Mespilus arbutifolia (Swamp Service), Cornus florida, Nyssa sylvatica, Vaccinium frondosum, Ligustrum vulgare, and Hedera quinquefolia, still support abundance of fruit. Nicotiana Tabacum, Tagetes patula, Lobelia Cardinalis, Lobelia siphilitica, Lobelia inflata, Salvia coccinea, Ipomœa Quamoclit, Stuartia Malacodendron, Canna indica, Franklinia alatamaha (Gordonia pubescens?), and many other vegetables, are still in flower, in the open ground.	
——— 15.	Anas Bernicla.†	Brent-Goose.		Sharp white frost. Thermometer, 58, in the morning.
	Fringilla Hudsonias. Fringilla ferruginea. Fringilla albicollis.	Snow-Bird. Fox-colored Sparrow. Large brown Sparrow, with red eye-brows.		These three birds make their appearance, from the northward, at the same time. The two last pass on to the southward, before the setting in of winter, or severe freezing weather.

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* Passes southerly in great flights.

† Immense flocks of these Geese are now seen, at great heights in the air, passing southerly.

* These two birds arrive from the north.

† These are still seen among us.

———30.			Various species of autumnal plants are still in flower. The greater number of them belong to the class Syngenesiæ, such as species of Coreopsis, Aster, Solidago, the Hellenium autumnale, Achillea Millefolium. Hamamelis virginica in full flower. It makes a fine appearance, the blossoms being of an agreeable yellow. The bushes are quite destitute of leaves.	
	Falco sparverius.	Little Falcon.		This species of Falcon now arrives from the northward, and passes on farther south.
November 10.			The deciduous trees and shrubs have, in general, cast off their discoloured and worn-out leaves.	The nocturnal Insects are hardly heard any more. They are either destroyed by the chilling frosts, or have retired to their winter-quarters. Some species of Gryllus are still heard to utter a feeble noise in the warmer evenings.
———20.				Different species of testudo, serpents, and frogs, approach near to their winter habitations, viz. springs and bogs, basking at mid-day, on the banks fronting the south, which have received the influence of the sun.
———30.				The Cat-bird, different species of Turdus, the Fringilla erythrophthalma, and almost all the Spring Birds of passage, which I have enumerated, have entirely disappeared, for some weeks, and will not visit us again until the return of Spring and Summer.
December 15.	Strix diurnalis (mihi).	Sharp-winged Day-Owl.	A few vegetables are still seen in flower in the open grounds, such as Leontodon Taraxacum, Lamium amplexicaule, Viola cordata, Viola palmata, and some species of Veronica. The two species of Viola are out of season, being early spring flowers.	Thermometer, 27.———Barometer, 29. 6.
	Fringilla cannabina ?	Greater Redpoll ?		This species now appears from the northward. See Appendix I.
	Columba carolinensis.	Carolina-Pigeon.		The Carolina-Pigeon, or Turtle-Dove, is still seen among us.
———17.				Thermometer, 34, at 7 o'clock in the morning: 47, at 2 o'clock in the afternoon.—— Barometer, 30. 1.

1791.	AUTUMNAL AND WINTER BIRDS OF PASSAGE.		PROGRESS OF VEGETATION.	MISCELLANEOUS OBSERVATIONS.
December 18.				Thermometer, 37, at 7 o'clock in the morning: 42, at 2 o'clock in the afternoon.——Barometer, 29. 9. and 29. 7. at these two hours.
1792.				
January 1.				
——10.				Frosts extremely severe. The Snow-bird, Loxia Cardinalis, and one or two species of Sparrow are the only birds that are seen.
——25	Fringilla cannabina ?	Greater Redpoll. ?*		Severe frosts and deep snows.
——30.	Emberiza nivalis.	Snow-Bunting.		
February 15.	Strix stridula ?	Tawny-faced Owl.		Thermometer, 24, in the morning: 32, in the afternoon.——Barometer, 29. 8½. Cloudy.
	Strix Nyctea. ?	Great-white-Owl.		
	* * * *	* * * * †		
——28.	Alauda alpestris.	Shore-Lark (Sky-Lark).		The severity of the frost relaxes.
	Alauda rubra. (G.)	Red-Lark.		
	Fringilla pinus (mihi).	Pine-Finch.		
	Fringilla ferruginea.	Ferruginous Finch.		
	Fringilla albicollis (G.)	White-throated Finch.		
	Fringilla tristis.	Golden Finch.		

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* Large flocks of these birds are now seen.

† These are properly Spring Birds of Passage.

SECTION III. Of the RESIDENT BIRDS of Pennsylvania.

By the Resident Birds, *I mean those birds which, in general, continue in Pennsylvania the whole year; which build their nests, rear their young, and are commonly thought to continue, near the district in which they themselves were reared. I shall enumerate these birds in the order of the Linnæan arrangement.*

ACCIPITRES. RAPACIOUS.

Falco Leucocephalus. White-Headed Eagle. (Bald-Eagle.) This, in the opinion of some persons, is the same bird as the next species. But I cannot adopt this notion.

Falco regalis of Bartram. *Travels.* Great Grey Eagle. This is our largest Eagle.

Falco aquilinus of Bartram. *Travels.* Great Red-Tailed Hawk. This is the largest species of Hawk hitherto discovered in Pennsylvania. The tail is of a red brick colour.

Falco columbarius. Pigeon-Hawk.

Falco glaucus of Bartram. *Travels.* Bluish Hawk. A beautiful species. Colour a pale sky-blue. Tips of the wings black. Feeds upon its prey, as it flies along with it.

Strix virginiana. Great Horned Owl.

Strix Asio. Red Owl, Little Owl. (Screech-Owl.)

Strix varius of Bartram. MS. Hen Owl. This is a large species without ears. It is next in size to the Strix virginiana, or Great Horned Owl. Of a clay or dirt colour, spotted with darker brown.

Lanius Excubitor. Great Shrike. (Gust Bird? Nine-Killer.) For some interesting information concerning this bird, see *Transactions of the American Philosophical Society.* Vol. IV.

* Lanius Collurio? Red-Backed Shrike. This species comes to us from the northward, in October or November. In very mild winters, stays in the vicinity of Philadelphia. Is always with us in the spring, on its return to the north. Does not breed with us: does not sing in the autumn, but does in the spring.

PICÆ. PIES.

Corvus Corax. Raven Crow. (Raven.) Corvus carnivorus of Bartram. *Travels.* Larger than the next species.

Corvus Corone. Carrion Crow. (Crow.†) This is the Corvus frugivorus of Bartram. *Travels.*

Corvus cristatus. Blue-Crow. (Blue-Jay, Jay-Bird.)

Picus pileatus. Pileated Woodpecker. (Wood-Cock.)

* Picus erythrocephalus. Red-Headed-Woodpecker. Continues about Philadelphia, in mild winters. In very cold winters, it goes farther southward.

* Picus auratus. Golden-Wing-Woodpecker. Some few of these birds are seen among us, in the warmer or milder winters. In general, they migrate farther southward.

Picus villosus. Hairy Woodpecker. *Se-se-ah* of the Wyandot-Indians.

Picus pubescens. Downy Woodpecker. *Sho-ah* of the Wyandot-Indians.

Sitta. Black-Headed Nuthatch. (Sap-Sucker.)

Certhia fusca of Bartram. MS. Brown-Creeper. I believe this species is not described. The general colour is a nut-brown: speckled with black or deep dusky: some white spots on the first coverts. Edwards *(Nat. Hist.* vol. I. 26.) has a bird a good deal like this. I mean his Little Brown and White Creeper.

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† There is another species of Corvus which differs from both the species here mentioned. It is larger than the Common Crow (Corvus Corone) and makes a noise more like that of the Raven, or Corvus Corax. It keeps upon the sea-coast. Mr. Bartram *(Travels)* calls this species Corvus maritimus. I have never seen it.

GRALLÆ. CLOVEN-FOOTED.

* Ardea Herodias. Great Heron. In very mild, open winters.

* Charadrius vociferus. Noisy Plover. (Kildee, Kildeer). In very mild winters.

GALLINÆ. GALLINACEOUS.

Meleagris Gallopavo. Wild-Turkey. I doubt if this be the same species as the domesticated kind, which is now so commonly met with in various parts of the world. But I do not, in the least, doubt that the domesticated kind was first brought from America into Europe. Indeed, I believe with Mr. Pennant, that America is exclusively its native country. The Delaware Indians call the Wild-Turkey, *Pe-le-oo*, or *Blae-u*.

Tetrao umbellus. Ruffed Grous. (Grous).

Tetrao cupido. Pheasant of Pennsylvania. (Pheasant). *Pab-ha-cku* of the Delawares.

Tetrao virginianus. Maryland Partridge. (Partridge, Quail). *Po-po-cus* of the Delawares.

PASSERES. PASSERINE.

* Columba migratoria. Passenger-Pigeon. (Wild Pigeon). See the Introduction, §.

* Columba carolinensis. Carolina-Pigeon. (Turtle-Dove). It is only during our very mild winters, that this species of Columba continues with us the whole year.

Alauda magna. Crescent Stare. (Meadow-Lark). Commonly continues with us during the whole year. In very severe winters, migrates farther south.

Turdus migratorius. Red-Breasted Thrush. (Robin). *Tschis-go-ckus* of the Delawares.

* Turdus Polyglottos. Mimic Thrush. (Mocking Bird).

Ampelis Garrulus. Prib Chatterer. (Cedar-Bird.)

Loxia Cardinalis. Cardinal Grosbeak. (Virginia Nightingale.)

* Loxia Curvirostra. Crossbill. (Shear-Bird.) In moderate winters stays with us; but generally goes farther south. Commonly comes to us, from the northward, about the beginning of September.

Motacilla Sialis. (Blue-Bird.) Stays with us in mild winters. In general, disappears upon the setting in of the very severe weather. A few days, however, of southerly wind and open warm weather, it is observed, will bring them back to us, even in the depth of winter.

Motacilla Troglodytes? (Marsh-Wren.) Commonly continues with us the whole year; in the winter time, taking shelter in our houses, stables, &c.

Parus bicolor. Toupet Titmouse.

Parus atricapillus. Canada Titmouse. Little Pied Titmouse.

* Parus virginianus. Virginian Titmouse. This species sometimes continues with us all the winter.

NOTE.

In strict language, there are very few of our birds entitled to the name of Residents. Pennsylvania, like every other portion of the United-States, is subject to great extremes of heat and cold; and these extremes are known to have a decided influence upon the dispositions of animals. During our coldest winters, therefore, many of those birds, which I have considered as residents, migrate to the south. This was the case in the ever-memorable winter of 1779 and 1780, when very few of the usually resident birds continued with us: and many of those, which did continue, perished with the severity of the cold.

OCCASIONAL, or ACCIDENTAL, RESIDENTS.

There is a propriety in the division of the Resident Birds, into such as commonly continue in the country the whole year through, and such as only occasionally continue. The latter may be called OCCASIONAL, or ACCIDENTAL, RESIDENTS. They seldom continue with us except in open, mild winters. These, in the preceding list, are marked with an asterisk.* I have had the less hesitation in blending them together, because it is highly probable, that in a tract of country so extensive and various as the state of Pennsylvania, some of the birds, which about Philadelphia are only occasionally resident, may be more generally so in other parts of the country.

OCCASIONAL VISITANTS.

Some of the birds which are observed in Pennsylvania may, with propriety, be thrown into a section called OCCASIONAL VISITANTS. Of these I have already made mention in the Introduction to these Fragments. These Occasional Visitants are such birds as occasionally come to Pennsylvania, either from the more northern or from the more southern parts of North-America. With *all* the causes which induce them to visit us, I am not sufficiently acquainted to speak on the subject, with confidence. The following, however, are certainly some of these causes, viz. severity of cold, scarcity of food, and intensity of heat.

I. The birds which are driven by the severity of cold all come to us from the northward. These occasional visitants are pretty numerous, during our very severe winters, when some of the birds of Canada and Labrador are seen among us. The two following species of Strix deserve to be mentioned under this head, viz. the Great White Owl (Strix Nyctea?). This species is never seen in the vicinity of Philadelphia, except in those winters which are very severe, long, and close. This and the following species (See the Tables) were seen about Philadelphia, at the close of the winter of 1791-92, which was one of our severest winters. The Tawney-Faced Owl (Strix stridula?) is a very beautiful species. It makes its appearance, in the day-time, near houses and barns, watching for mice, or for those weakly birds which have been compelled by the severity of the cold to take shelter there.

II. It may readily be imagined, that a scarcity of food, particularly of their favourite food, is one of the causes which induce birds to make occasional visits to other countries than their own. I am even of opinion, that this has been the original cause of some of those migrations which are now regular and extensive.

III. I have mentioned intensity of heat, or very warm weather, as one of the causes which sometimes impel or induce birds to migrate to us. It is probable, however, that this cause more frequently operates in a secondary manner; that is, by producing a scarcity of food. All the Occasional Visitants that fall under this section come from the southward. See the Introduction, where I have mentioned some of these visitants.

ADDITIONS to the LIST of BIRDS.

The following deserve a place in an history of the birds of Pennsylvania. They are all, except the Psittacus, found in the vicinity of Philadelphia, or within eighty miles of it.

ACCIPITRES.

1. Falco Ossifragus? Sea-Eagle. I mention this on the authority of my ingenious friend Mr. G. S. Oppelt, of Nazareth, in Pennsylvania. He says it agrees with the Falco Ossifragus, "only that the cera is not lutea but obscura." The one which he examined measured seven feet from wing to wing. Killed near Nazareth. MS.
2. Strix Aluco. Speckled Owl. On the authority of Mr. Oppelt.
3. Strix Naevia. Mottled Owl. On the authority of Mr. Oppelt.
4. Strix passerina. Little Owl.

PICÆ.

5. Psittacus pertinax? Illinois Parrot? Either this or some other species of the genus deserves to be mentioned among the birds of Pennsylvania. It has been seen in Shareman's Valley. See Introduction, §. VII.

GRALLÆ.

6. Scolopax nutans? Nodding Snipe? Seen and killed in the winter-time, near Nazareth, in Pennsylvania. On the authority of Mr. Oppelt. Mentioned by Mr. Pennant, as having been observed in Chateaux Bay, on the coast of Labrador, in September. Arctic Zoology. Vol. II. P. 167.

7. Charadrius Himantopus. Long-Legged Plover. On the authority of Mr. Oppelt.

8. Haematopus Ostralegus. Pied-Oyster-Catcher.

PASSERES.

9. Loxia ludoviciana. Red-Breasted Gross-Beak.

10. Fringilla purpurea. Purple Finch. This is one of our birds of passage. Early in the spring, sometimes in February, it comes up from the south, and returns from the north, going southward, in October.

11. Fringilla————. (Hemp-Bird.) This is one of our migratory birds. It is not the Fringilla cannabina of Linnæus; but, like it, feeds on the ripe hemp-seed. Is often seen about Philadelphia. On the authority of Mr. William Bartram, who thinks it an undescribed species.

12. Hirundo Subis. Canada Swallow,† Great American Martin.‡ On the authority of Mr. Oppelt, who observed it in the neighbourhood of Bethlehem. Has never been seen about Philadelphia. Yet it is probable, that it is a bird of passage. Perhaps, it passes from the north to the south, and returns to the north, through the country west of the great ranges of our mountains, which is certainly the rout pursued by some of the migratory birds that are seldom, or never, seen in the Atlantic parts of the United-States. Perhaps, this is no other than the Tapera of Brasil, the Hirundo Tapera of Gmelin.

13. Caprimulgus europaeus. European Goatsucker. (Night-Hawk.) In Maryland, if I mistake not, it is called Bull-Bat. *Pischk?* of the Delaware-Indians. This, or a variety of it, is *certainly* a native of Pennsylvania. So that now all the fifteen species of this genus (mentioned by Gmelin) are known to be natives of America; and all, with the exception of the Caprimulgus europaeus, are, as far as is yet known, exclusively confined to this portion of the world. This is an interesting fact, which does not favour the opinion of those writers who have imagined, that all animals and all vegetables were originally created in the old world, from whence they have been spread over every portion of the earth: an opinion which ought never to have been advanced by philosophers; and which it is not likely will prevail among those naturalists who observe with attention, and deliver their sentiments without reserve or timidity.§

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† Latham. ‡ Edwards.

§ See New Views of the Origin of the Tribes and Nations of America. Pages ci, cii, ciii, civ. Philadelphia: 1798.

I. APPENDIX:

CONTAINING

OBSERVATIONS

On the greater number of the Birds, which are mentioned in the preceding Tables. †

* ORIOLUS phoeniceus. I cannot altogether admit of the propriety of placing this bird among the *Picæ*, as Linnæus and other naturalists have done. The female appears to be an Emberiza, or Fringilla. This bird is the Sturnus predatorius of Mr. William Bartram. See his *Travels.*

* Muscicapa fusca. This is the Muscicapa nunciola of Bartram. *Travels.*

* Alauda rubra. The Alauda migratoria of Bartram. *Travels.* Alauda fusca of the same gentleman. The specific name rubra is an improper one: for the bird has no red feathers.

* Alauda alpestris. This is the Alauda campestris of Bartram. *Travels.*

* Fringilla domestica (mihi). Motacilla domestica, or Regulus rufus of Bartram. *Travels.* In very mild winters, this social domestic little bird continues with us. It is the earliest of our spring singing birds. Its note is tremulous and agreeable. Catesby has figured it, VOL. I. P. 35.

* Fringilla ferruginea. I suspect this is the Hedge-Sparrow of Lawson, P. 144. It is the Fringilla rufa of Bartram. *Travels.* Edwards calls it Little Sparrow. Pl. 354. In New-York it is called the Shepherd.

* Fringilla albicollis. Fringilla fusca of Bartram. *Travels.*

* Fringilla melodia. In mild winters, this bird continues in Pennsylvania, associating with the Snow-Birds. Does not appear to be described.

* Passer palustris of Bartram. This appears to be a species of Fringilla. I do not find that it is described.

Fringilla exilis. This a good deal resembles the Motacilla Regulus, or Golden-crested Warbler. Perhaps, they are the same.

* Fringilla tristis. In different parts of the United-States, this bird is known by a variety of names, such as Gold-Finch, Yellow-Bird, Lettuce-Bird, Sallad-Bird, Flax-Seed-Bird.

Sitta canadensis. I have been mistaken in calling this the Sitta canadensis. It is a distinct species: perhaps Le Torchepot de Canada of Brisson. Tom. 3. P. 592, 593, 594. Pl. 29. Fig. 4. Sitta peregrina of Bartram. MS. Sitta varia, ventre rubro of Bartram. *Travels.* I think Mr. Pennant, to whom I sent a drawing and description of it, considered it as a new species.

* Picus auratus. I am informed, that this bird is known, in Maryland, by the name of Dish-Washer. Linnæus says this species does not climb trees; but this is a mistake: and it builds its nest, like the other species, in the holes of trees.

* Gracula Quiscula? Several respectable authors, and among others Mr. Pennant, ‡ have confounded the bird thus noted in the Tables with the Gracula Quiscula of Linnæus. But they are certainly distinct species. I do not

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† Those species which are known to breed in Pennsylvania are designated by an asterisk.

‡ Arctic Zoology. Vol. I. p. 308, 309.

know that the Gracula Quiscula has ever been seen immediately about Philadelphia. It is commonly seen on or near the sea-coast, and not often twenty miles distant from it. It loves the neighbourhood of the sea, and of brackish water. The Gracula which I mention, in the Tables, is very common about Philadelphia, where it associates with the Red-Wing Oriole, or Oriolus phoeniceus, and with Crows (Corvus Corone), committing great depredations on the mays in the fields; and in the Southern States, on the rice that is stacked in the barn yards. Builds on trees, pretty high up, and seems, for this purpose, to give a preference to the evergreens, such as tall Pine-trees, &c. Our Gracula is either the Gracula Barrita, Boat-Tail-Grakle, or very nearly allied to it.

* Fringilla pecoris. This bird certainly belongs to the same genus as the Oriolus phoeniceus, whether that be Emberiza or Fringilla. It follows cows and horses, pulling asunder their excrements, in order to get at the seeds. It alights on their backs, eating flies and other insects from them. In some parts of Pennsylvania, it is best known by the name of Cow-Bird. It is the Sturnus stercorarius of Bartram. *Travels.*

* Motacilla Sialis. This is one of our earliest singing birds. Its note is highly agreeable. It is the *Tschi-hoa-pe-ke-lis* of the Delawares. See P. 12. Sect. III.

* Scolopax Gallinago. Scolopax americana rufa of Bartram. *Travels.* It is the *Me-me-u* of the Delaware-Indians.

* Charadrius vociferus. This species is observed to increase in proportion as the country becomes cleared. Is very seldom seen remote from the habitations of man.

* Scolopax minor. Scolopax minor arvensis of Bartram. *Travels. Pi-si-co-lis?* of the Delaware-Indians.

* Hirundo purpurea. *Pons-pau-cloo-moose*, or "the bird that never rests," of the Mohegan-Indians. I am of opinion, that this and the three other species of Swallow, which I have mentioned, are migratory birds. I am not ignorant, that an opposite opinion is gaining ground among us. See Dr. Belknap's *History of New Hampshire*, Vol. III. p. 174. My friend, Mr. William Bartram, assures me, "that he has seen, in the spring, large flocks of all our Swallows, upon their passage from the south, and in the autumn, on their return southward from Pennsylvania, through Carolina, to Florida, where, however, neither of them winter; but continue farther on southward." *MS. penes me.* I cannot but consider the testimony of this gentleman, in matters of this kind, as of high value. Indeed, all my enquiries convince me, that our swallows are migratory birds. I am, however, far from denying, that swallows have *occasionally* been found in the hollows of decayed trees, in different parts of our country, during that very season, when it supposed these birds are in a more southern climate. I will not even deny, that they have been found under the mud of rivers, &c. These, however, must be considered as *extraordinary* instances, which very rarely occur. They only serve to show the accommodating powers of birds, which sometimes continue in a country the whole year through, and in other times migrate from these countries. It is not difficult to account for some of the instances of Swallows being found in trees, &c. In these instances, I presume, the birds have been compelled to take up their habitations here, after their return from the south, having been surprized by very cold weather. The Swallows are, certainly, very impatient of cold.† No wonder, therefore, that in a climate so variable as that of Pennsylvania, these birds should sometimes retire into trees, &c. to seek shelter. I have observed, that several weeks after the first appearance of the Swallows in the spring, the coming on of a cold day, has occasioned in them great distress. The following fact will strikingly illustrate what I am saying. The beginning of the month of April, 1773, was unusually warm. In the vicinity of Philadelphia, the clover, in some of the fields, was five or six inches high. The Martins (Hirundo purpurea) were seen about the city: at this time, there came on suddenly a very severe spell of cold weather. It destroyed many of these birds, several of which were seen to drop down, benumbed or dead, among the clover.

If any species of our swallows continues with us the whole year, I think it most likely to be the Hirundo———, or Little Bank-Martin. I have been informed, that in several instances, this species has been found in a torpid state, in the holes of banks. I am also told, that above thirty years ago, a number of these birds were found in a Gum-tree (Nyssa sylvatica †), about four miles from the town of Lancaster. This was in the depth of winter. They were all torpid, but some of them, upon the application of heat, recovered.

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† My very respectable and learned friend Dr. John Walker, Professor of Natural History in the University of Edinburgh, used to inform his class, that he "Once knew a cold night (in Scotland) to overtake the Martins (Hirundo urbica), the Swifts (Hirundo Apus), and the Swallows (Hirundo rustica), which benumbed them to such a degree, that they seemed dead, but when they were brought into a warm room, they recovered, and after the sun rose, they all took to the wing. Not one of them was destroyed by the cold."

Of the four species of Pennsylvania swallows, (viz. Hirundo purpurea, the Hirundo rustica? the Hirundo————, and the Hirundo pelasgia) the first, or Purple Martin, is the one which commonly visits us the earliest, viz. at the end of March, or beginning of April. The House-Swallow and the Little Bank-Martin come next, and the Chimney-Bird last of all. This, at least, is the general order of the appearance of the four species.

Hirundo rustica? This is not the Hirundo rustica of Europe. It wants a name. It may be called Hirundo horreorum, from its so generally frequenting our barns to build its nest. But this name is liable to objections. I do not know any of our *Indian* names for this species. One of *these* (if not too long) would be the best specific name we could give to it.

Hirundo————. Little Bank-Martin. This is not the Hirundo riparia of Linnæus. It has, however, very much the manners or habits of that bird. I have never seen the Hirundo riparia in any part of America. Kalm, Pennant, Gmelin, and other writers assert that it is a native of this continent. Dr. Belknap (P. 173) mentions the Hirundo riparia in his list of the birds of New-Hampshire: but I do not doubt that he means our Little Bank-Martin. I know (without any particular allusion to my excellent deceased friend) how the nomenclature of natural history has been conducted in America.

Falco piscatorius. This is Catesby's and Bartram's name. It is the *Ni-me-nees* of the Delaware-Indians.

Certhia Pinus.

Fringilla graminea. This is the Passer campestris of Bartram. MS.

Motacilla cærulea. Perhaps, this bird is more properly a species of the genus Parus. It forms a very curious nest of the moss which grows upon rocks, trees, &c.

Ardea Herodias. See Section III. p. 12.

Alcedo Alcyon. *Tis-ke-man-nis?* of the Delaware-Indians.

Colymbus septentrionalis. Flocks of these birds frequent our large rivers, diving for fish. Their voice is musical, especially when a southerly wind blows strong. This is the Colymbus musicus of Bartram. *Travels.* It is as large as a goose.

Colymbus migratorius of Bartram. This is near the size of a goose. Colour black. Bill red. Their principal food is eels and other fish. They visit the neighbourhood of Philadelphia, when the frosts are passed. They generally fly in companies of two, three, or four together, and but a little above the surface of the water.

Colymbus Podiceps. This is sometimes called the Water-Witch.

Anas sponsa. This beautiful species is the *Gi-gi-tschi-mu-is* of the Delaware-Indians. It builds its nest in the holes of trees. Attempts have been made to domesticate it: but hitherto, they have not, I believe, been successful.

Columba carolinensis. See Section III. P. 12. It is the *Me-med-ha-cke-mo* of the Delaware-Indians.

Columba migratoria. These birds commonly pass the winter-season in the forests of Carolina, Georgia, and the two Floridas; and pass over the Gulph of Mexico to the Bahama-Islands. Upon their return southward in the autumn, they sometimes stay with us a considerable time, and they have been known, during our mild winters, to continue with us, as I have already observed. See Section III. P. 12. and Introduction. P. ix. §. XVI.

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† Of Marshall: Nyssa integrifolia of Aiton.

* Turdus rufus. Builds its nest of loose sticks, using no cement. In this respect, it agrees with the Turdus Polyglottos, or Mocking-Bird, but differs from the Turdus migratorius, or Robin. This last uses a kind of mud or mortar, in making its nest.

* Ardea Nycticorax. The Ardea clamator of Bartram. *Travels.*

* Motacilla Troglodytes? This is the Motacilla palustris, or Regulus minor, of Bartram. *Travels.* In many respects, this little bird agrees with the Motacilla Troglodytes of Linnæus: the Wren of the English. I am not quite certain, whether they are not both the same species; but, I believe, they are different. Our bird constructs a very curious nest, resembling in shape a bottle, or pitcher. The materials which it makes use of are dry grass, among the living grass of meadows. The Motacilla Troglodytes? of which I am speaking, is a species of Certhia, or Creeper. It certainly belongs to the same genus as the Certhia familiaris mentioned below, and the Certhia floridana, afterwards taken notice of.

* Ardea virescens. Commonly called S——e-Poke.

* Certhia familiaris (mihi). I now suspect, that this is no other than the Certhia familiaris of Linnæus, the European Creeper of Pennant; Le Grimpereau of Buffon. Mr. Pennant mentions this as an inhabitant of North-America, and tells us, that it is found in Sweden, "and never quits the country." † This to the American naturalist, is an interesting fact; for the Creeper is with us undoubtedly a bird of passage: a bird of passage, in a much milder climate than that in which it is a continual resident!! But many facts like this will be discovered in the progress of natural science.

* Hirundo pelasgia. This is the Hirundo cerdo of Bartram. *Travels.*

* Caprimulgus virginianus. This is the *Wee-coo-lis* of the Delaware-Indians. Although it feeds entirely upon insects, its flesh is said to be delicious. I have been informed, that some of these birds have been found in a torpid state, in hollow trees, in Jersey. But I cannot entirely depend upon the fact; and I have little hesitation in saying, that this bird, as well as the Swallows, to which it is allied, is a bird of passage. For some notices concerning the superstitious opinions of our Indians respecting this bird, see my letter to Dr. Priestley, in the *Transactions of the American Philosophical Society.* VOL. IV.

* Lanius Tyrannus. This I rather consider as a species of Muscicapa. It may be called Muscicapa rex. It eats both insects and fruit. Is very destructive to bees, and to grapes.

* Oriolus Baltimore. As far as I know, this is the only Pennsylvania bird that builds a pensile or hanging nest. Mr. Pennant is mistaken in saying that the Oriolus phoeniceus, or Red-Wing Oriole, which I have already mentioned, builds such a nest. "The Red-Winged Orioles, (says he) build their nests in bushes, and among the reeds, in retired swamps, in form of a hang-nest; leaving it suspended at so judicious a height, and by so wondrous an instinct, that the highest floods never reach to destroy it." ‡ Hernandez seems to have known this bird (the Red-Wing) very well. He describes it under the name of "Acolchichi, seu avis rubeorum humerorum." Pag. 14. CAP. IV.

* Muscicapa carolinensis. This is the Lucar lividus of Bartram. *Travels.* This bird seems to be nearly allied to that tribe of birds which is called, by Edwards and Brisson, Manakin. Besides insects, it feeds on many sorts of ripe fruit.

* Parus luteus. This is Bartram's name. *Travels.* Catesby has figured and described this bird under the name of Parus Carolinensis luteus, or the Yellow Titmouse. Page 63. Plate 63.

* Muscicapa fusca (Catesby). The Muscicapa cantatrix of Bartram. *Travels.*

* Trochilus Colubris. I have not been able to learn that the Humming-Bird winters in any, not even in the warmest, parts of the United-States. I cannot hesitate to consider it as a bird of passage. A gentleman, how-

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† Arctic Zoology. VOL. I. P. 334.

‡ Arctic Zoology. VOL. I. P. 300.

ever, (whose name I do not recollect) wrote a little paper to prove, that these birds continue with us all the winter: why? because one of them was one frosty day, in the month of October, found a good deal benumbed in a church, in some part of New-England; I think in Connecticut.

* Turdus Trichas. This bird is most improperly arranged by Linnæus under his genus of Turdus.

* Picus erythrocephalus. This is the *Me-ma-koch-cus* of the Delaware-Indians. See Section III. P. 11.

* Motacilla aurocapilla. This is very properly considered as a species of Turdus, or Thrush, both by Edwards and by Pennant. It is the Turdus minimus, vertice aurio, of Bartram. *Travels.*

* Tanagra rubra. This and the Summer-Red-Bird of Catesby (VOL. I. P. 56.) both belong to the same genus. Their note and their manners are the same. They both eat the same food, viz. fruit and insects.

* Muscicapa olivacea. I do not think, with Mr. Pennant,† that this is the same bird as the Whip-Tom-Kelly of the West-Indies. Our bird has no such note; but a great variety of soft, tender, and agreeable notes. It inhabits forests, and does not, like the West-India bird, build a "pendulous nest."

* Muscicapa Ruticilla. Ruticilla americana of Bartram. *Travels.*

* Turdus minor. Turdus melodes of Bartram. *Travels.* This is, perhaps, the most musical of all the birds of the United-States, notwithstanding the assertions of Catesby and other writers to the contrary.

* Muscicapa viridis. This is a bird of very singular form, manners, and language. I am not satisfied as to its genus. It seems to be allied to the Manakin of Edwards and Brisson.

* Falco sparverius. In the month of March, it builds its nest in hollow trees, and feeds its young with mice, frogs, and small birds.

* Tanagra cyanea. This is sometimes called in Pennsylvania, Indigo-Bird. It is the Linaria cyanea of Bartram. *Travels.*

* Cuculus americanus. Cuculus Carolinensis of Bartram. *Travels.* This bird is better figured by Buffon (*Pl. Enlum.*) than by Catesby.

* Alauda magna. See Section III. P. 12.

* Tringa macularia (G). Tringa maculata of Bartram. *Travels.*

* Motacilla chrysoptera. Parus alis aureis of Bartram. *Travels.*

* Motacilla petechia. Mr. Pennant is mistaken in saying that this pretty species does not breed in Pennsylvania.

* Muscicapa rapax of Bartram. I take this to be the Lesser Crested Fly-Catcher of Mr. Pennant: the Muscicapa acadica of Gmelin. It is a very useful little bird, destroying numbers of the common house-fly and other troublesome insects. It continues with us until late in September, when it retires southerly to pass the winter.

* Ardea cinerea.

* Rallus virginianus. This is the bird which is so well known in Pennsylvania by the name of Rail. It is a question much disputed among our sportsmen, whether this be a bird of passage, or whether it continues among us. I have no doubt, that it is a bird of passage. It is well known in Carolina and Florida, where it commonly continues late, devouring the seed of the Zizania, Rice, and other aquatic plants. Whether it hiemates in these countries, or goes still farther to the south, I do not know.

* Ardea parva of Bartram. I cannot find that this species is described. It builds its nest in the grass of meadows. It is the smallest species of the genus that is known to me.

* Alauda Calandra. This is the Calandra pratensis of Bartram. *Travels.* The Calandra floralia of the same gentleman.

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† Arctic Zoology. V. II. P. 79.

* Motacilla vermivora. Mr. Pennant is mistaken when he asserts, that this bird "does not appear in Pennsylvania till July, in its passage northward." †

Certhia floridana (mihi). This bird I do not find figured or described. It is mentioned by Mr. Bartram *(Travels)*, under the name of Motacilla coroliniana, or Regulus magnus. It is nearly twice the size of the House-Wren, or Certhia familiaris? Like it, its voice is loud and musical. The upper side of the Certhia floridana is of a nut-brown colour, delicately marked with transverse waved lines, of a darker colour. The throat, breast, and belly are of a yellowish clay colour. A line of the same colour passes, in form of an arch, over each eye. The bill is long, and a little bent downwards. This is a common bird in Carolina and Florida. It only occasionally visits Pennsylvania, viz. in long and warm summers. Is much more common in the Jerseys.

Vultur Aura. This bird rears its young in the southern states, before its arrival among us. I cannot learn, that it ever breeds in Pennsylvania. I have been informed, that these birds have occasionally been found, in the winter-season, in the hollows of trees, and in the crevices of rocks, in different parts of the United-States, even to the north of Philadelphia. It is the *Wi-nan-ge-u* and *A-ma-tschi-pu-is* of the Delawares, *Sot-seh-tah* of the Wyandots, and *Gus-soo* of the Mohegans.

* Ardea alba. Ardea immaculata of Bartram. *Travels.*

Ardea aequinoctialis. Ardea alba minor of Bartram. *Travels.* It is Pennant's Red-Billed Egret.

Emberiza oryzivora. If I do not mistake, this bird in Connecticut is called the Strawberry-bird. On the authority of Mr. Catesby, it has been believed by the most respectable naturalists (Pennant and others), that the male and female Rice-Birds migrate separately, at different seasons. Thus, it is imagined, that the males make their appearance in the vicinity of Philadelphia in the spring, and the females in the autumn, or the close of summer. Some facts which have come under my notice induce me to suspect, that this is a vulgar error: one of the many mistakes with which natural history is crouded and deformed. But, at present, I can only throw out the suspicion.

* Parus bicolor. This is the Parus cristatus of Bartram. *Travels.* This species feeds both upon insects and upon seeds, picking the kernel out of the husk. In Pennsylvania, it is called Tom-tit.

* Parus virginianus. Parus cedrus of Bartram. This bird feeds upon seeds and berries, particularly upon the resinous berries of the Juniperus virginiana, or Red-Cedar. Commonly comes to us, from the northward, about the time these berries are ripe, ‡ and seems peculiarly fond of harbouring itself among these trees. Generally continues with us as long as the berries and insects (upon which also it feeds) last, and then goes northerly. Sometimes, however, it continues with us all winter.

* Ampelis Garrulus. In some parts of New-England, this species is called Cherry-Bird. Like the Parus virginianus, it is very fond of the ripe berries of the Red-cedar. It is also very fond of the ripe fruit of the Diospyros virginiana, or Persimmon. Builds its nest in trees of a moderate size, about the end of May, or the beginning of June.

Fringilla cannabina? I am not quite certain whether this be the Fringilla cannabina of Linnæus. It is certainly very nearly allied to this species. Large flocks of these birds visit us towards the end of the fall, or the beginning of the winter. They often fly at very great heights in the air: so high that they cannot readily be seen, though their noise is distinctly heard. Either this species or one very nearly allied to it is found as far south as the country of the Cheerake-Indians, who call it *O-na-clo-nei-ta.* If this be the Fringilla cannabina, it has an extensive range in North-America, for it is found in the northern parts of this continent. It is one of the species which is common to the old and new world. It is not improbable, that it performs regular migrations from the one continent to the other.

* Scolopax Gallinago. I have already mentioned this species, § and have taken notice of the regularity of its arrival among us. ‖ It is, certainly, a bird of passage. This seems to be the same species which is so common in En-

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† Arctic Zoology. Vol. II. P. 100.——See Introduction. P. viii. ‡ See the Tables. P. 7. § See Appendix I. P. 16. ‖ See Introduction. P. xi.

gland, and in other parts of Europe, and concerning whose disappearance the learned have so much disputed. There are pretty good reasons for believing, that these birds perform regular migrations between Europe and America. It is remarkable, that they are more numerous on the western than on the eastern shore of Britain. They are still more numerous in the west of Ireland than in the west of Scotland. "For one Wood-Cock on the east-coast of Scotland there are twelve in the west, and for one in the west of Scotland there are twelve in Ireland."[*] Lord Kenmor, about the last of September, sailed from Lisbon to Falmouth, in England, and for ten or twelve days was becalmed on the coast of France. Every day, he saw from ten to twenty Wood-cocks passing from the west towards the land. These it was imagined, came from the continent of America. But I do not suppose that all our Wood-cocks thus migrate to Europe. It is pretty certain, that these birds when they visit us in the spring come from the south, and in the autumn they return to the south again. How far south they proceed, I am unable to determine. They are known in Florida, where it is not improbable, that many of them pass the winter-season.

Fringilla pinus (mihi). This is one of our spring birds of passage, and I think is not described. It commonly continues with us until the middle or the end of April, at which time the Apple and the Pear trees are in bloom. These blossoms, during some particular seasons, are remarkably infested by a species of Chermes, which proves very destructive to the fruit. By feeding on these devouring insects, the Fringilla pinus is one of the most useful of our birds. This bird, the Fringilla tristis, my Fringilla exilis, and the Fringilla cannabina? together with the Fringilla Carduelis of the old world, all belong to the same natural genus, or family. They seem, in some respects, to constitute a genus distinct from the Fringilla.

AS these Fragments profess to contain some *useful* observations,[†] I think this a proper place to observe, that many of the birds of Pennsylvania, and other parts of the United-States, are so extremely useful to man, by destroying insects and reptiles of various kinds, that they ought studiously to be preserved, if not by the Laws, at least by the Good-Sense, of the country. It would require many observations to give a complete list and history of these Useful Birds. I am not in possession of a sufficient quantity of facts for this purpose: but some observations I can offer, as materials for future inquirers.

It may, in the first place, be observed, that insects appear to be the first food of almost all the birds of our country. The more I have inquired, the more I have been convinced, that almost all birds live, in some measure, upon insects. Even those species which consume considerable quantities of seeds, berries, and fruit, also consume large quantities of insects: and there are reasons to believe, that others whose principal food is the nectar of plants also live partly upon these insects. Thus Mr. Brandis[‡] found the vestiges of insects in the stomach of the Trochilus, or Humming-Bird, one of the last birds one would have suspected of feeding on animal food.

The greater number of our smaller birds of the order of *Passeres*, seem to demand our attention and protection. Some of them feed pretty entirely upon insects, and others upon a mixed food, that is, insects and the vegetable seeds, &c. Many of them contribute much to our pleasure by the melody of their notes. I believe the injury they do us is but small compared to the good they render us. I shall mention, under six different heads, a few of the useful birds of this and some other orders.

I. Muscicapa acadica of Gmelin? This is the Lesser Crested Flycatcher of Pennant. It is called in Pennsylvania the Lesser or Wood-Pewe. This little bird builds in woods and in forests. After the young have left the nests, the parents conduct them to the gardens and habitations of men. Here the whole brood dwells in trees near the houses, where they are fed with the common house-fly, and other insects, that are caught by the old birds. The young ones are soon capable of obtaining their food in the same way. This species of Muscicapa visits us in the spring, and commonly continues with us until late in September, when it retires southerly to winter.

II. The Motacilla Sialis, or Blue-Bird, feeds principally, if not entirely, upon insects, both such as are flying and and such as are reptile. It is said they eat currants.

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[*] Reverend Dr. Walker, of Edinburgh.

[†] See the motto, in the Title-Page.

[‡] See the article Trochilus in Gmelin's edition of the Systema Naturæ. Tom. I. P. 485.

III. Most of our species of Picus, or Woodpecker, appear to me to be very useful in destroying insects, particularly those which injure our forest and orchard-trees. It is true, these birds are sometimes injurious to us, by eating some of our finest fruits, particularly our cherries, and therefore pains are taken to expell them from our gardens. But they devour vast numbers of insects, particularly some of those species which prove so destructive to the trunk of the trees, such as the coleopterous insects, which, perhaps, do as much mischief as the caterpillars.

IV. As a devourer of pernicious insects, one of the most useful birds with which I am acquainted, is the House-Wren, or Certhia familiaris?[*] This little bird seems peculiarly fond of the society of man, and it must be confessed, that it is often protected by his interested care. From observing the usefulness of this bird in destroying insects, it has long been a custom, in many parts of our country, to fix a small box at the end of a long pole in gardens, about houses, &c. as a place for it to build in. In these boxes they build and hatch their young. When the young are hatched, the parent birds feed them with a variety of different insects, particularly such as are injurious in gardens. One of my friends[†] was at the trouble to observe the number of times that a pair of these birds came from their box, and returned with insects for their young. He found that they did this from forty to sixty times in an hour; and in one particular hour the birds carried food to their young, seventy-one times. In this business, they were engaged the greater part of the day; say twelve hours. Taking the medium, therefore, of fifty times an hour, it appeared that a single pair of these birds took from the cabbage, sallad, beans, peas, and other vegetables in the garden, at least six hundred insects in the course of one day. This calculation proceeds upon the supposition, that the two birds took each only a single insect each time. But it is highly probable they often took several at a time.

The species of Certhia of which I am speaking generally hatches twice during the course of the summer. They are very numerous about Philadelphia, and in other parts of the United-States.

The fact just related is well calculated to show the importance of attending to the preservation of some of our native birds. The esculent vegetables of a whole garden may, perhaps, be preserved from the depredations of different species of insects by ten or fifteen pair of these small birds: and independently of this essential service, they are an extremely agreeable companion to man: for their note is pleasing. A gentleman, in the neighbourhood of Philadelphia, thinks he has already reaped much advantage from the services of these Wrens. About his fruit-trees, he has placed a number of boxes for their nests. In these boxes, they very readily breed, and feed themselves and their young with the insects, which are so destructive to the various kinds of fruit-trees, and other vegetables.

V. The services of the Ibis in devouring the reptiles of Egypt are well known. They procured to this bird a veneration and regard which form an interesting fact in its history, and in the history of human superstitions. The Storks are, perhaps, not less useful. Pliny tells us, that these birds were so much regarded for destroying serpents, that in Thessaly, in his age, it was a capital crime to kill them, and that the punishment was the same as that for murder. Virgil hints at the usefulness of the stork when he describes it as "longis invisa colubris." In Holland, even in our times, they go wild, protected by the government, from a sense of their usefulness in the way I have mentioned.

In Britain, if it were not for the Herons, and some other birds of this tribe, the frogs, the toads, and other reptiles, would increase to so great a degree, as to prove a real nuisance. North-America abounds with birds of this order; and we even have some species of Ibis, very nearly allied to the Ibis of Egypt, such as the Tantalus Loculator, or Wood-Pelecan;[‡] the Tantalus ruber, or Scarlet Ibis,[§] the Tantalus fuscus or Brown Ibis,[||] and the Tantalus albus, or White Ibis.[¶] Mr. Bartram informs us, that the first of these birds feeds "on serpents, young alligators, frogs, and other reptiles."[**] It is commonly seen "near the banks of great rivers, in vast marshes or meadows, especially such as are caused by inundations, and also in the vast deserted Rice plantations."[††] This bird, both with regard to his general aspect, and his manners and habits, may be considered as the Ibis of America. In the midst of all their superstitions, I do not find, however, that the native Americans have ever paid any particular regard to this bird. I cannot learn that any of these species of Tantalus have ever been seen in Pennsylvania.

[*] In the Tables, it is called Certhia familiaris (mihi).

[†] Mr. John Heckewelder, of Bethlehem, in Pennsylvania.

[‡] Wood Ibis of Pennant.

[§] Red Curlew of Catesby.

[||] Brown Curlew of Catesby.

[¶] White Curlew of Catesby.

[**] Travels, &c. P. 150.

[††] *Ibid.*

VI. Some of the birds of the Vultur-kind are extremely useful to man, by destroying immense quantities of carrion, which serve to vitiate the air, and perhaps in some instances to give rise to malignant epidemics. The Vultur Aura, or Turkey-Buzzard of our country, is one of the most useful of these birds. In Virginia it is protected by a law of that state. The Abbé Clavigero speaks of the usefulness of the *Cozcaquauhtli*, or King of the Zopilots, the Vultur Papa of Linnæus. "The Zopilot, says this writer, is a most useful bird to that country (Mexico), for they not only clear the fields, but attend the crocodiles and destroy the eggs which the females of those dreadful amphibious animals leave in the sand to be hatched by the heat of the sun. The destruction of such a bird ought to be prohibited under severe penalties."*

I am sensible, that these few facts, which are thrown together without any regard to order, can be of little use except in as far as they may turn the attention of other persons, who possess more leisure and information than myself, to the subject, which is at once curious and important. It appears to to me be a subject peculiarly interesting to my countrymen. Perhaps, few parts of the world are more infested with noxious insects than the United-States. The greater number of these insects are, I believe, natives of the country, though our partiality to the soil which gave us birth has not always allowed us to acknowledge this truth. Thus we give to the Hessians the honour of introducing among us that most pernicious insect, the Hessian-Fly, which, for several years, has committed, and still commits, such alarming ravages on some of our most valuable grains, particularly the Wheat and the Rye. But this insect is, undoubtedly, a native of America. How it came to be, for so long a time, overlooked, will probably be mentioned in a memoir, concerning this and other noxious insects, which I hope to publish.

Many of the pernicious insects of the United-States seem to be increasing, instead of diminishing. Some of these insects which originally confined their ravages to the native or wild vegetables, have since begun their depredations upon the foreign vegetables, which are often more agreeable to their palates. Thus the Bruchus Pisi, or Pea-Fly, is a native, and seems originally to have fed, in a great measure unnoticed, upon the indigenous vegetables which are allied to the Pea: but since the introduction of this last† among us, it is the principal, if not the only, vegetable which suffers from the ravages of this insect. The Hessian-Fly could not originally have inhabited the Wheat, the Rye, and other similar gramina of this kind, for these vegetables are not natives of America. It is now more formidable to us than would be an army of twenty thousand Hessians, or of any other twenty thousand hirelings, supplied with all the implements of war. The caterpillar, which has begun its ravages upon the leaves of the Lombardy Poplar,‡ that contributes so much to beautify our city, is most probably a native of our woods. It prefers this fine foreigner to the less palatable leaves upon which it has been formerly accustomed to feed. Other instances of this kind might be mentioned. They show how very necessary it is to watch the migrations of insects from the native to the introduced vegetables; and they teach us a truth, not I think sufficiently attended to by naturalists, that different kinds of insects are much less confined to vegetables of the same species, or to species of the same genus, than has been commonly imagined. It is certain, that the same species of insects, in America, often feeds indiscriminately, and in succession, upon plants of very opposite genera, and even of very different natural orders.

Hitherto, too little progress has been made among us in the discovery of remedies for the great mischiefs occasioned by insects. The subject has not been examined with sufficient attention. It has given place to discussions and inquiries of very inferior utility; and I fear it will not claim all that industrious attention which it so well merits, until the evil shall have spread still farther. It is, doubtless, difficult, but it is by no means impossible, to prevent the ravages of noxious insects. In this important business, something has already been done in our country. We have discovered a method of diminishing the depredations of the little bug, called Cucumber-Fly, which proves so destructive to the cucurbitaceous vines, particularly those of the Cucumber, and Musk-melon.§ By manuring our wheat-lands, and thereby increasing the strength and vigour of the wheat, we have lessened the evil of the Hessian-Fly. By suspending to our young apple and other trees pieces of tow, impregnated with a mixture of brimstone and train-oil, we have learned how to frighten away the periodical Locusts (Cicada septemdecim of Linnæus), which often do so much injury to our orchards.* The American Philosophical Society, by calling the attention of the public to the decay of our Peach-trees, has brought us to a better acquaintance with the causes of this decay, and with the means of preventing it. Insects are no doubt one of these causes.† We have made some progress in preventing the mischief of the Bruchus Pisi, or Pea-Fly, which proves so destructive to one of the finest esculent vegetables. But all that has yet been done is very little compared to that which remains to be done. The subject is as new as it is important.

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* The History of Mexico. Vol. I. P. 48.

† Pisum sativum.

‡ Populus dilatata of Aiton.

§ See the Tables. Page 4.

I am very far from imagining, that the preservation of some of those species of birds which I have mentioned would be the *only* means of guarding against, or of limiting, the depredations of *any* of our noxious insects. In a system so complex, and so difficult, as this, many agents must be employed. Most of them have a necessary connection with the industry of man, which is an implement that gives him an immense, an almost unlimited, command over all the living objects of this earth. It is in his power to increase or diminish the number of animals and vegetables about him; and even to destroy *whole species.* Some of these means must be suggested, if they cannot be put into immediate practice, by the ingenuity of philosophers, or observers. Their speculations will sometimes, perhaps, be trivial, and useless. Now and then, their "wild blunders and risible absurdities" (to use the words of Dr. Johnson, ‡ on a subject, indeed, very different from the present) may for a time furnish folly with laughter, and harden ignorance in contempt; but useful diligence will at length prevail."

The few facts which I have mentioned will be sufficient to show, that some good in the prevention of mischievous insects, may be expected from different species of birds. Every American farmer's experience will furnish him with some additional fact in support of this notion. If careful observations on this subject are made, we shall soon know which are our friends, and which are our enemies: which deserve to be cherished and preserved, and which it will be our interest to banish or destroy.

END OF PART FIRST.

POSTSCRIPT.

THE preceding "fragmentary rubbish" (to use the words of Donne) is thrown upon the public with some degree of confidence: —with confidence, merely because it regards a country, the natural history of which has hitherto been so little attended to. I must observe, though perhaps the reader will not believe me, that I could render these pages more worthy of his notice. But I want leisure. It is this want of leisure that has prevented me from publishing a number of tracts, relative to the natural history of North-America, which have long lain in my closet, in a state nearly as imperfect as these very imperfect FRAGMENTS. Whether they will ever be published, will depend, in some measure, upon the reception given to the present work.

I ask, I look for, no flattering reception. All I ask, all I require, is to be informed, by those who love and study nature, that my present labours are not altogether useless, and unentertaining. Until there shall arise among us some happy genius, qualified by that union of talents, of leisure, and enthusiastic ardour, which is necessary to form the character of a genuine naturalist, every collection of facts, every individual fact, that will tend to illustrate the natural history of the United-States, *ought* to be received with candour, and indulgence.

I have entitled these Fragments, "Part First," because if this is favourably received, I shall publish, in the course of the next year, two other parts, relative to other subjects of the natural history of our State. I have made considerable progress in an extensive work on the Vegetables of Pennsylvania, and some of the adjoining States. But this will appear in a separate form: —I will not say when. For who does not know, that "the promises of authors are like the promises of lovers?"

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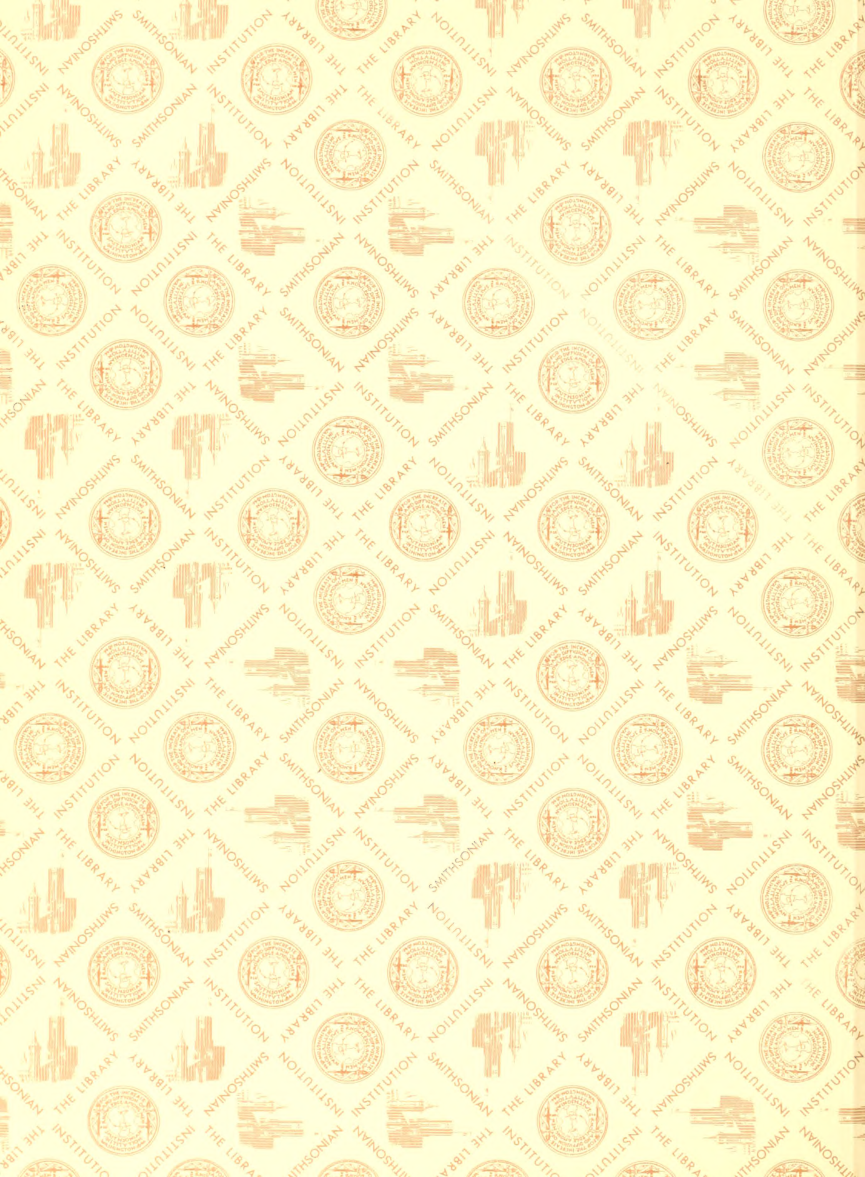
* It is only the female Cicada septemdecim that does mischief to our orchards, &c. This she does by making incisions into the tender branches, to deposit her eggs. In consequence of this operation, the leaves perish. The insect does no mischief "by devouring the leaves," as has been asserted by some respectable writers. See Transactions of the American Philosophical Society. VOL. III. Introduction. Page xxii.

† The peach-insect (It is an Ichneumon) is observed to injure young trees more than old ones. Perhaps the best remedy against the mischief of this insect is to dig up the ground about the roots in the spring-season, and to take out the larva or worm. This may be done without much difficulty, and the operation does not injure the tree. Do not the peach-trees suffer more from our late night-frosts than from insects? These night-frosts, especially after rainy weather, in the months of February and March, when the sap is ascending, are certainly very pernicious. They occasion the bark to crack so that the sap is permitted to run out. I suspect that this is one of the principal causes of the decay of our peach-trees.

‡ See the Preface to his Dictionary of the English Language. Quarto edition.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